NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

REPORT No. 351

FULL SCALE WIND TUNNEL TESTS OF A PROPELLER WITH THE DIAMETER CHANGED BY CUTTING OFF THE BLADE TIPS

By DONALD H. WOOD

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AERONAUTICAL SYMBOLS

1. FUNDAMENTAL AND DERIVED UNITS

	Symbol	Metric		English	
		Unit	Symbol	Unit	Symbol
Length	l	meter	m	foot (or mile)	ft. (or mi.)
Time	t	second	s	second (or hour)	sec. (or hr.)
Force	F	weight of one kilogram	kg	weight of one pound	lb.
Power	P	kg/m/s		horsepower	hp
Speed		km/hr	k. p. h.	mi./hr.	m. p. h.
		m/s	m. p. s.	ft./sec.	f. p. s.

2. GENERAL SYMBOLS, ETC.

W, Weight, $=mg$

g, Standard acceleration of gravity $=9.80665$ m/s^2 $=32.1740$ ft./sec.^{2}

m, Mass, $=\frac{W}{g}$

ρ, Density (mass per unit volume).

Standard density of dry air, 0.12497 (kg-m^{-4} s^2) at 15° C and 760 mm $=0.002378$ (lb.-ft.$^{-4}$ sec.^{2}).

Specific weight of "standard" air, 1.2255 kg/m^3 $=0.07651$ lb./ft.^{3}

mk^2, Moment of inertia (indicate axis of the radius of gyration, k, by proper subscript).

S, Area.

S_w, Wing area, etc.

G, Gap.

b, Span.

c, Chord length.

b/c, Aspect ratio.

f, Distance from C. G. to elevator hinge.

μ, Coefficient of viscosity.

3. AERODYNAMICAL SYMBOLS

V, True air speed.

q, Dynamic (or impact) pressure $=\frac{1}{2}\rho V^2$

L, Lift, absolute coefficient $C_L=\frac{L}{qS}$

D, Drag, absolute coefficient $C_D=\frac{D}{qS}$

C, Cross-wind force, absolute coefficient $C_C=\frac{C}{qS}$

R, Resultant force. (Note that these coefficients are twice as large as the old coefficients L_C, D_C.)

i_w, Angle of setting of wings (relative to thrust line).

i_t, Angle of stabilizer setting with reference to thrust line.

γ, Dihedral angle.

$\rho\frac{Vl}{\mu}$, Reynolds Number, where l is a linear dimension.

e. g., for a model airfoil 3 in. chord, 100 mi./hr. normal pressure, 0° C: 255,000 and at 15° C., 230,000;

or for a model of 10 cm chord 40 m/s, corresponding numbers are 299,000 and 270,000.

C_p, Center of pressure coefficient (ratio of distance of C. P. from leading edge to chord length).

β, Angle of stabilizer setting with reference to lower wing, $=(i_t-i_w)$.

α, Angle of attack.

ϵ, Angle of downwash.

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By DONALD H. WOOD
Langley Memorial Aeronautical Laboratory

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

NAVY BUILDING, WASHINGTON, D. C.

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By Donald H. Wood

SUMMARY

Tests were conducted in order to determine how the characteristics of a propeller are affected by cutting off the tips. The diameter of a standard 10-foot metal propeller was changed successively to 9 feet 6 inches, 9 feet 0 inches, 8 feet 6 inches, and 8 feet 0 inches. Each propeller thus formed was tested at four pitch settings in the Propeller Research Tunnel of the National Advisory Committee for Aeronautics using an open cockpit fuselage and a D–12 engine.

A small loss in propulsive efficiency is indicated. Examples are given showing the application of the results to practical problems.

INTRODUCTION

In the early days of aeronautics it was common practice to adapt propellers to airplanes by cutting off the tips until the desired revolutions were attained. This procedure often led to freak designs and, of course, at times was the wrong thing to do; but the designer lacking test data and in many cases pressed for time and money, found no other course possible. With the advent of adjustable pitch metal propellers designed by later and more reliable methods, it may appear surprising that the practice still continues. The explanation is that a modern propeller will not be far wrong when initially selected, and with the higher cost of metal over wood propellers, it is sometimes more economical for manufacturers and customers to make changes in this manner.

Since accurate measurements of the characteristics had not previously been made, the tests described here were conducted in the Propeller Research Tunnel of the National Advisory Committee for Aeronautics at Langley Field, Va., with a view to determining quantitatively the propulsive efficiency, thrust, and torque of a propeller as its diameter was successively reduced. For each diameter the propeller was tested at four blade settings.

APPARATUS

The Propeller Research Tunnel, the balances, torque dynamometer, and testing methods have been described in Reference 1. The torque dynamometer was installed in an open cockpit fuselage with a D–12 425-horsepower engine. This fuselage mounted on the balance ready for tests is shown in Figure 1.

The propeller used, designated as No. 3792, had adjustable aluminum alloy blades. It was furnished by the Bureau of Aeronautics of the Navy Department. Initially the diameter was 10 feet. The other diameters were obtained by cutting off 3 inches from each tip and then rounding with a circular arc tangent to the leading and trailing edges. The upper surface was then rounded off for about one-half inch in the larger diameter and 1 inch as the diameter became less and the thickness greater. The propellers thus obtained form a series of five diameters from 10 feet to 8 feet. The appearance of the blades is shown in Figure 2. Figure 3 is a detail drawing of the blade with the successive tip radii indicated. Nondimensional blade form and thickness curves derived from the drawing dimensions are given in Figure 4. Each diameter propeller was tested at pitch settings of 12, 17, 23, and 28 degrees at 0.75 of the radius. The resulting pitch distributions are plotted in Figure 5. The usual washout of pitch near the hub is to be noted and also the small differences in pitch distribution for the different diameters.

METHODS

The torque as measured is the net torque on the engine bearers. The engine was entirely inclosed in cowling which was supported free of the dynamometer. Consequently no correction for torque due to the slipstream is required and the torque as read is used in the computation of coefficients.

The resultant horizontal force of the propeller-body combination, which may be either a thrust or a drag, was measured on the regular thrust balance (Reference 1). This resultant force R may be considered as made up of the three horizontal components—

T = the thrust of the propeller operating in front of the body (the tension in the crankshaft).

D = the drag of the airplane or fuselage alone (without the propeller) at the same air

velocity and density, that is, the same dynamic pressure q.

ΔD = the increase in drag of the fuselage with propeller, due to the slipstream.

This propulsive efficiency includes the increase in drag of all parts of the airplane (in this case the fuselage) affected by the slipstream, and also the effect of the body interference on the propeller thrust and power.

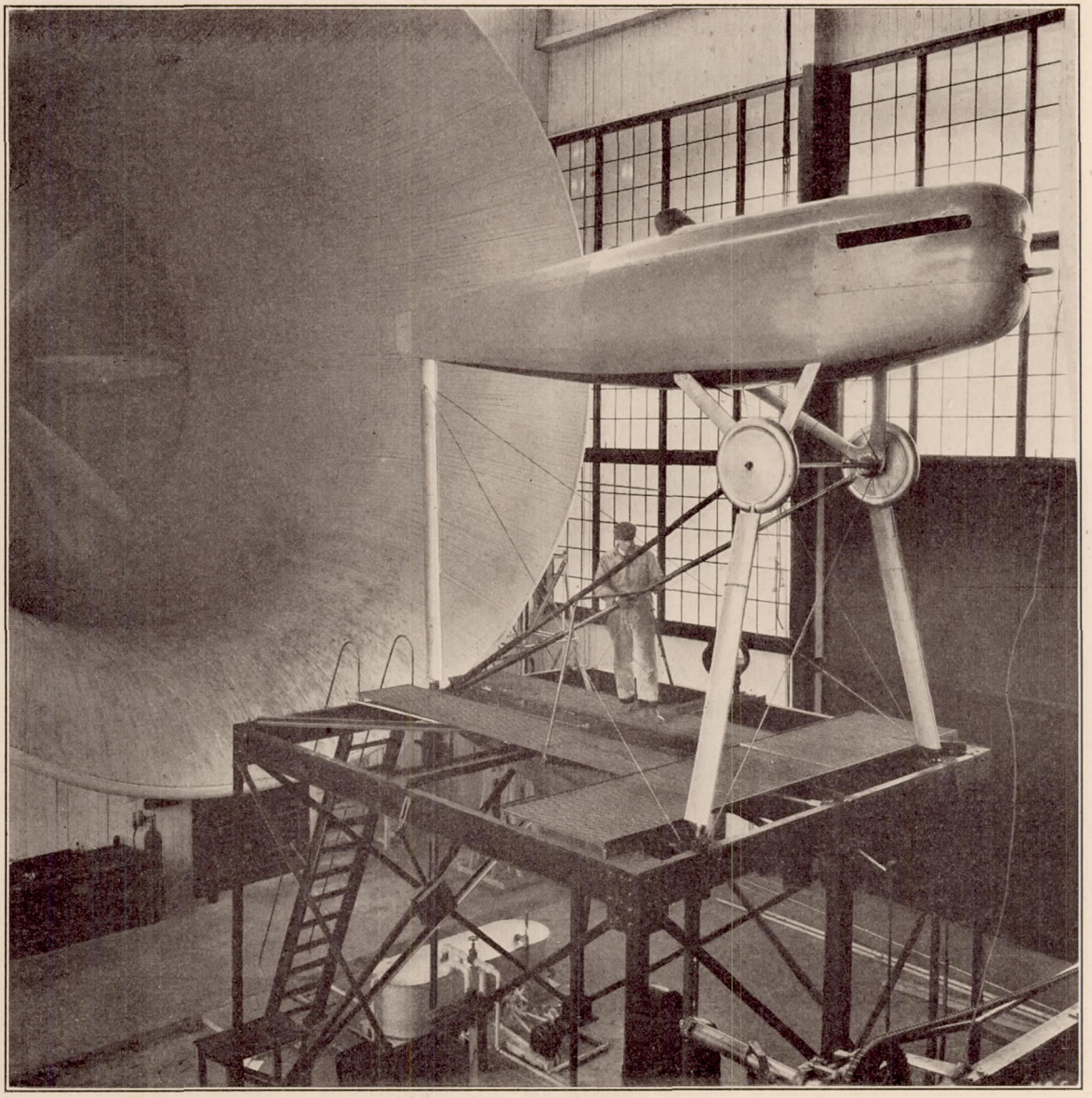

FIGURE 1.—Fuselage mounted for tests

Then $R = T - D - \Delta D$ (1)

To obtain the propulsive efficiency, which includes any propeller-body interference, an effective thrust is used which is defined as

$$\text{Effective thrust} = T - \Delta D$$

$$\text{or from (1)} \qquad = R + D$$

The propulsive efficiency, then, is the ratio of the useful power to the input power, or

$$\text{Propulsive efficiency} = \frac{\text{effective thrust} \times \text{velocity of advance}}{\text{input power}}.$$

RESULTS

The observed data are given in Table I with the standard nondimensional coefficients computed from them.

$$C_T = \frac{\text{effective thrust}}{\rho n^2 D^4}$$

$$C_P = \frac{\text{input power}}{\rho n^3 D^5}$$

$$\eta = \frac{\text{effective thrust} \times \text{velocity of advance}}{\text{input power}}$$

where D is the propeller diameter and n the revolutions per unit time. The coefficients for each diameter and pitch setting were plotted against $\frac{V}{nD}$. Typical examples of these plots are given in Figures 6 to 9, inclusive. The coefficients read from the faired curves at even values of $\frac{V}{nD}$ are given in Table II.

$$C_S = \sqrt[5]{\frac{\rho V^5}{P n^2}}$$

where V is the velocity of advance and P represents the power absorbed by the propeller. Propellers operating at the same value of C_S are operating under like conditions of power, velocity, and revolutions, and can be fairly compared. Figure 27 gives the envelope of the efficiency curves of Figures 22 to 26, inclusive, and also the $\frac{V}{nD}$ for maximum efficiency plotted against the coefficient C_S.

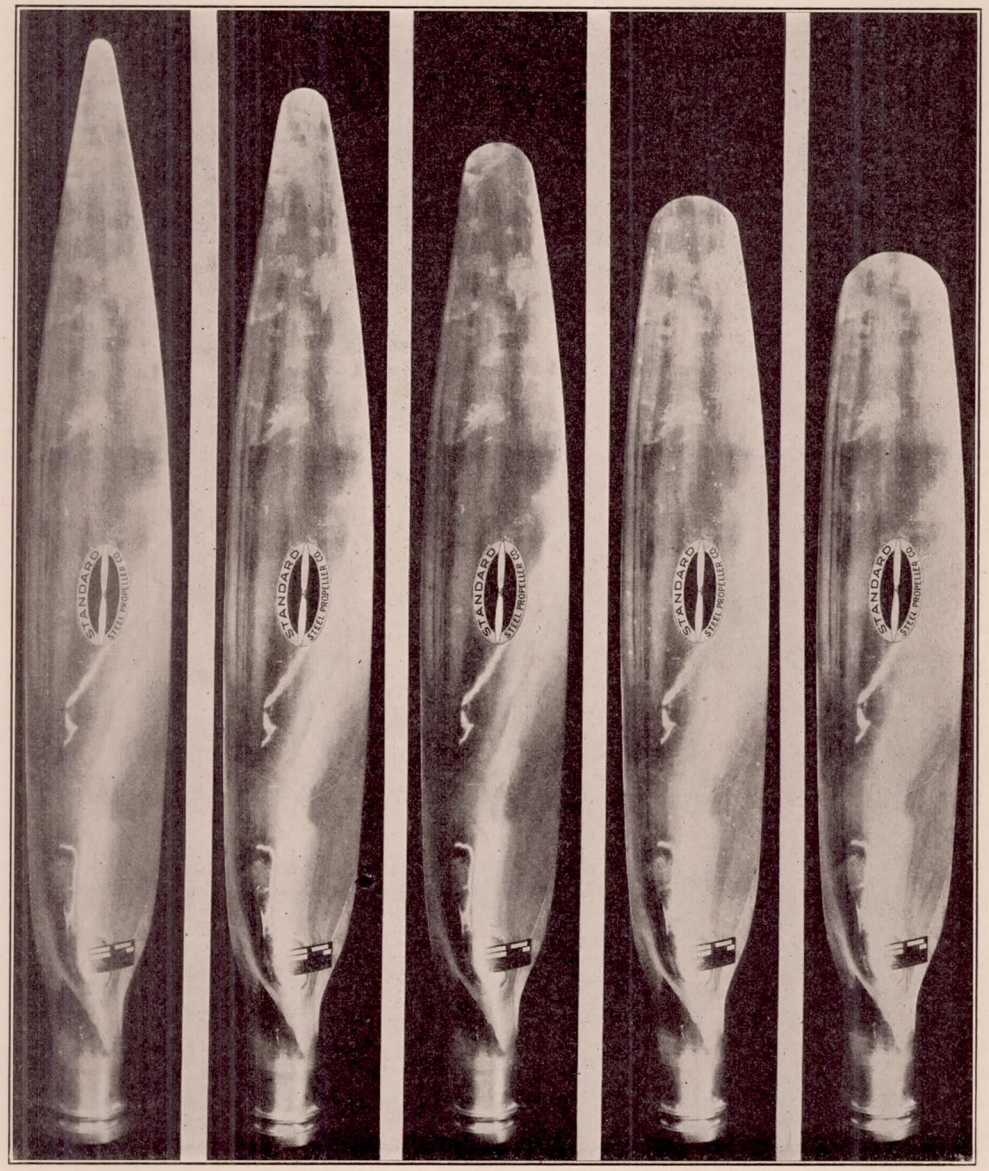

FIGURE 2.—Propeller series of five diameters

Figures 10 to 21, inclusive, give the thrust coefficient, power coefficient, and propulsive efficiency curves for the different diameters for comparison. The curves for one pitch setting for all the diameters are plotted on the same sheet.

In Figures 22 to 26, inclusive, the values of propulsive efficiency and $\frac{V}{nD}$ are plotted against the coefficient

DISCUSSION

When the diameter of a propeller is reduced in the manner described, changes in plan form and thickness

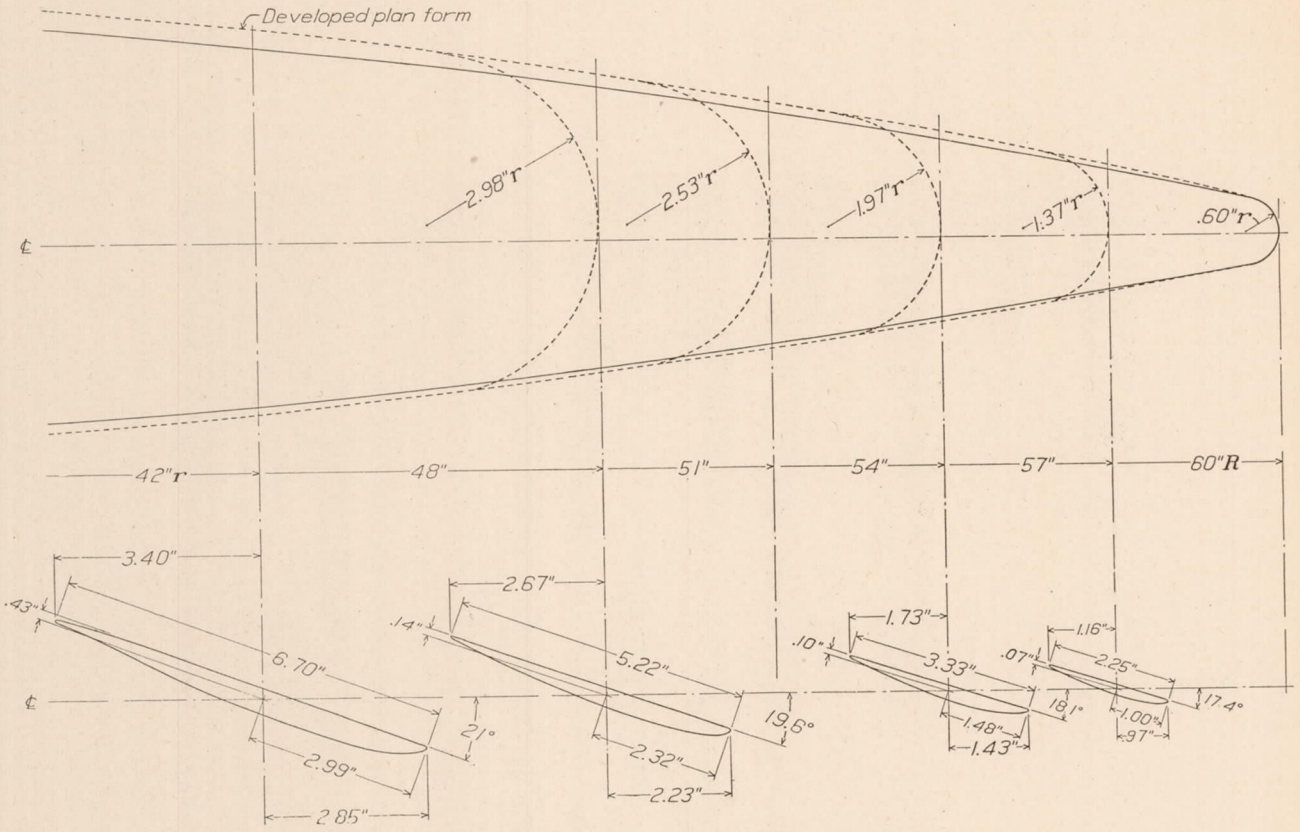

FIGURE 3.—Detail drawing with the successive tip radii indicated
For ordinates see table, page 16.

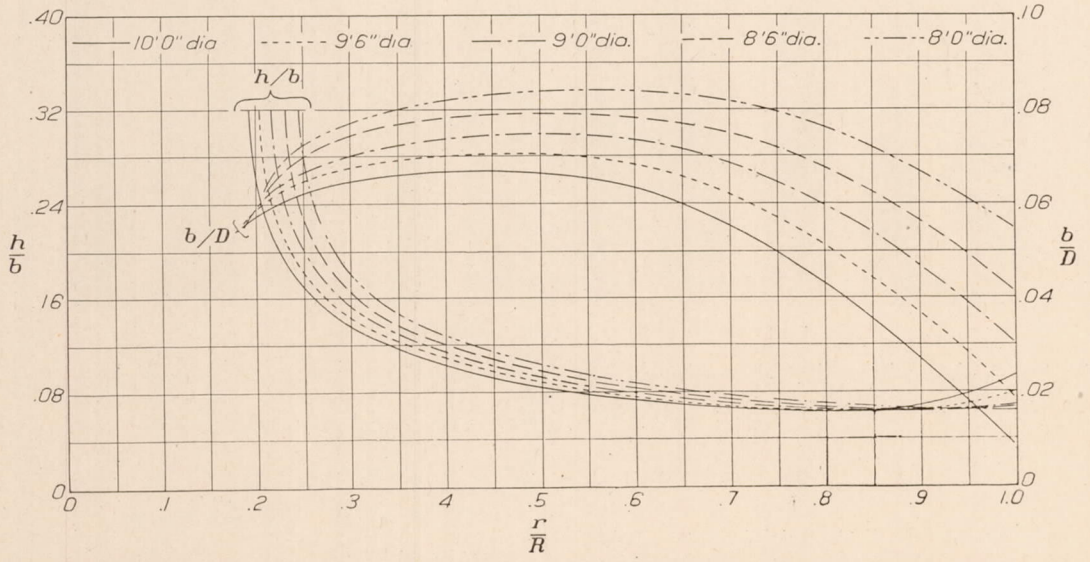

FIGURE 4.—Blade form curves propeller No. 3792. D=diameter. b=blade width. h=blade thickness. R=tip radius=$D/2$. r=radius

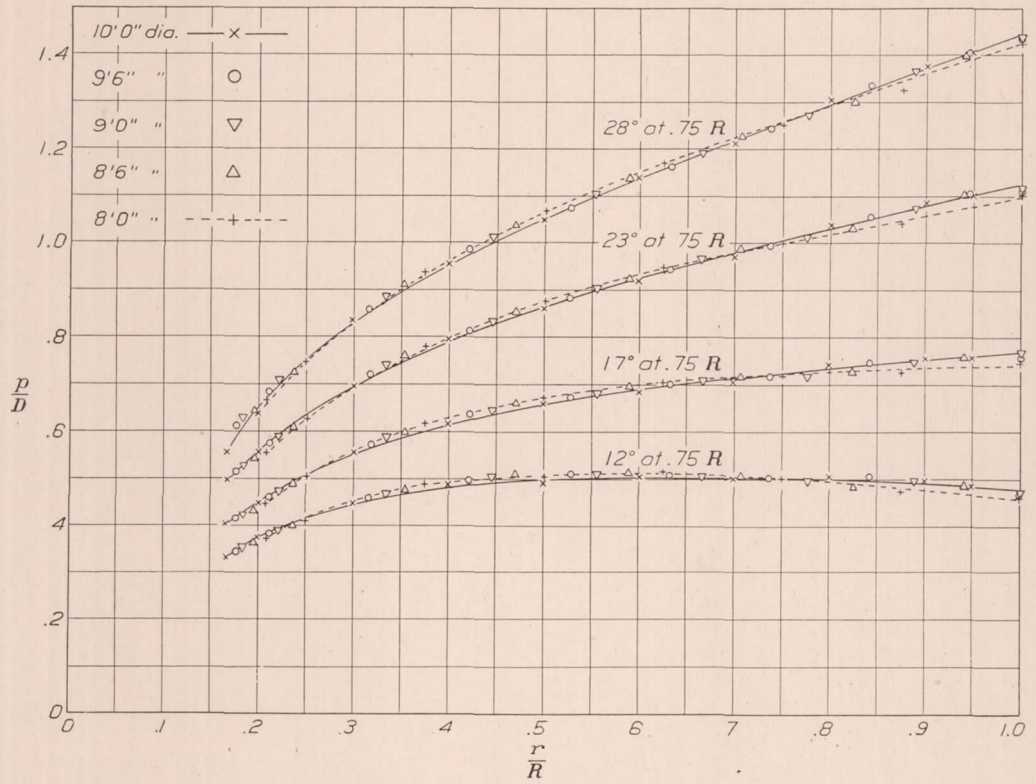

FIGURE 5.—Pitch distribution, propeller No. 3792

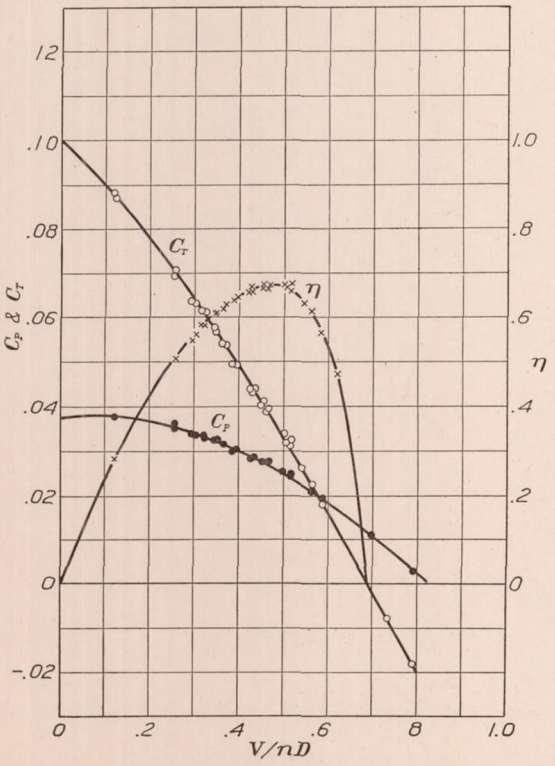

FIGURE 6.—Propeller No. 3792. Diameter, 8 feet (12° at 0.75 *R*)

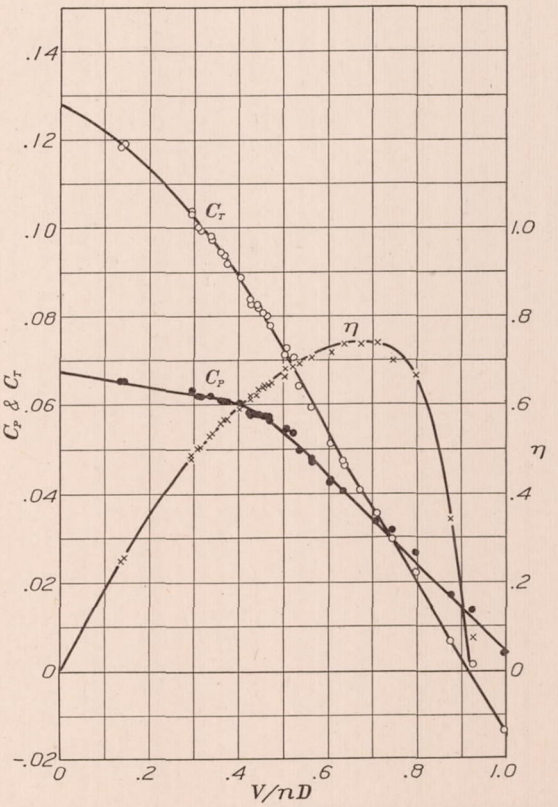

FIGURE 7.—Propeller No. 3792. Diameter, 8 feet (17° at 0.75 *R*)

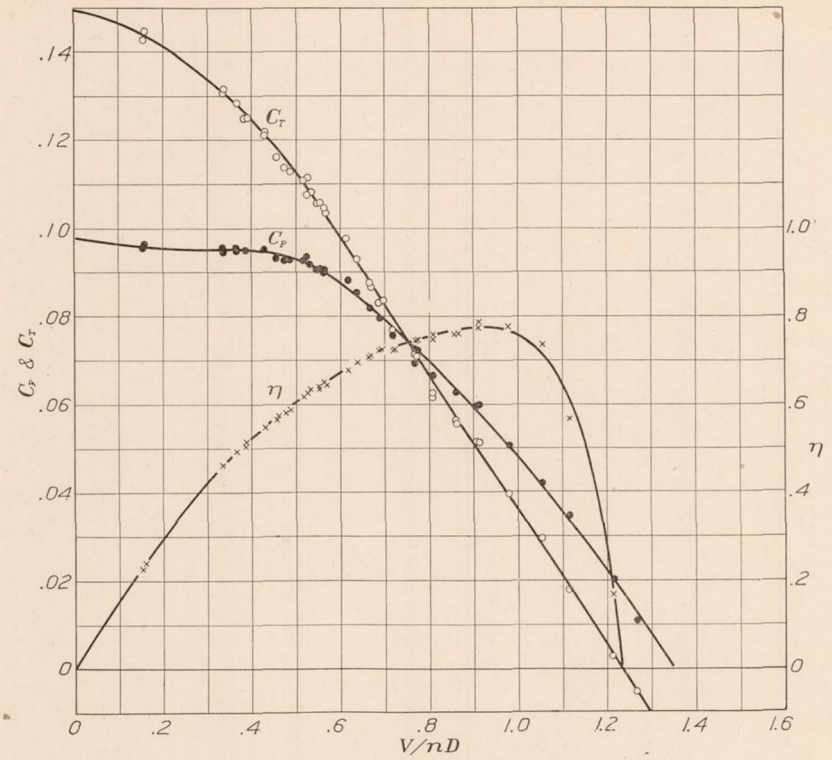

FIGURE 8.—Propeller No. 3792. Diameter, 8 feet (23° at 0.75 R)

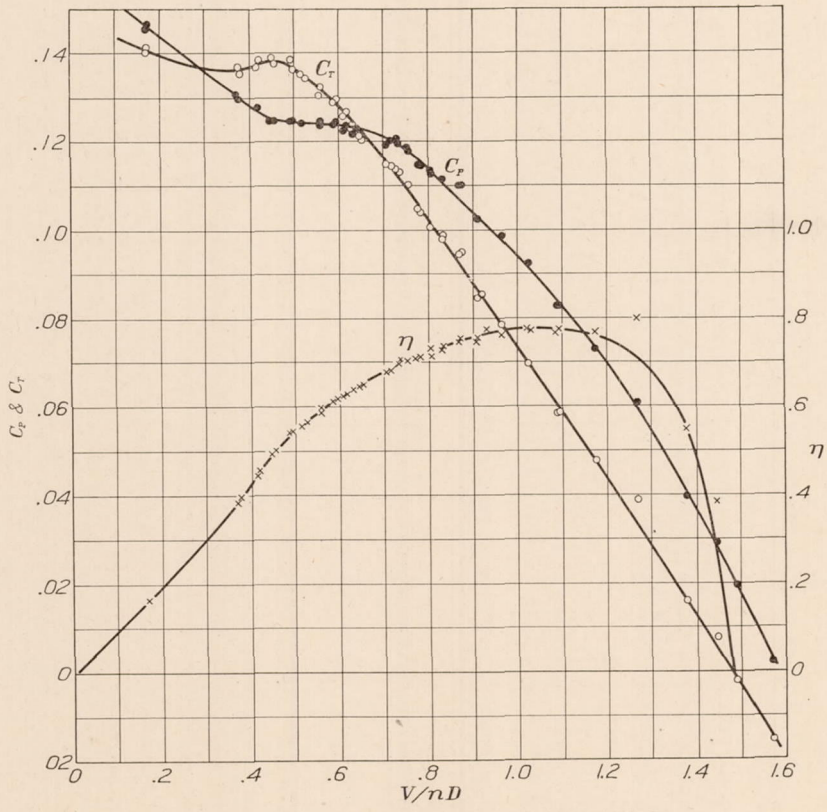

FIGURE 9.—Propeller No. 3792. Diameter, 8 feet (28° at 0.75 R)

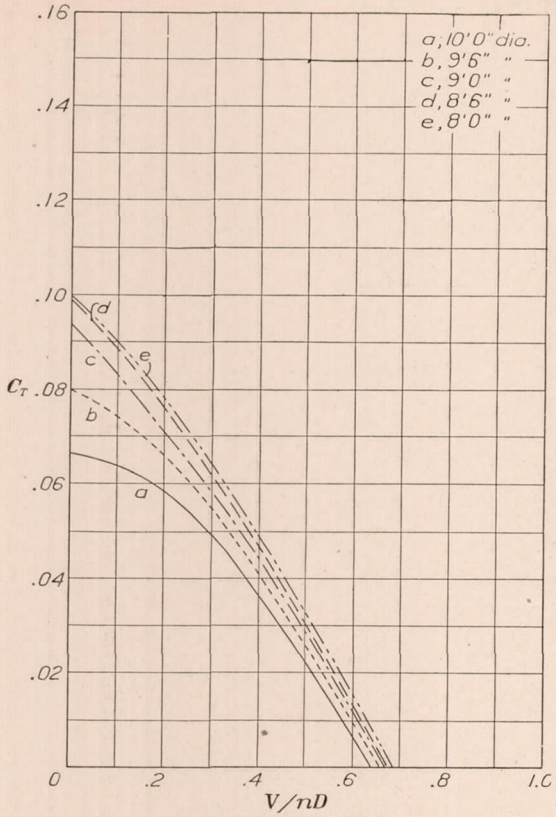

FIGURE 10.—Propeller No. 3792. (12° at 0.75 *R*)

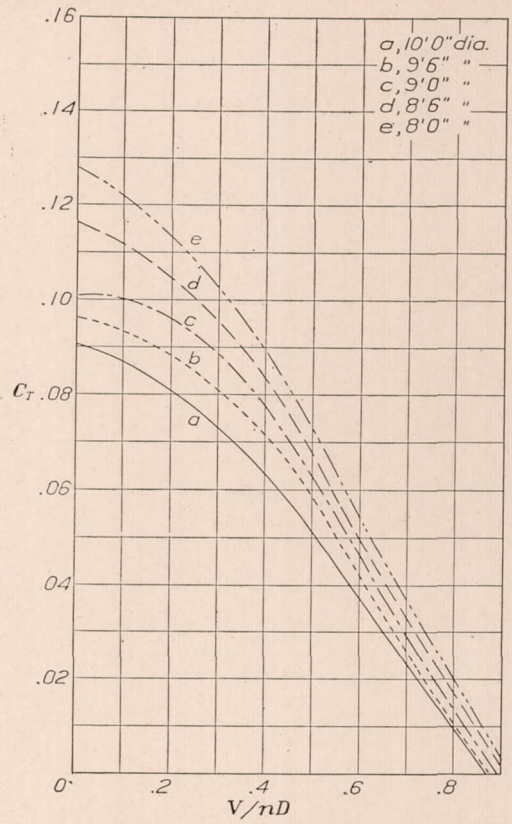

FIGURE 11.—Propeller No. 3792. (17° at 0.75 *R*)

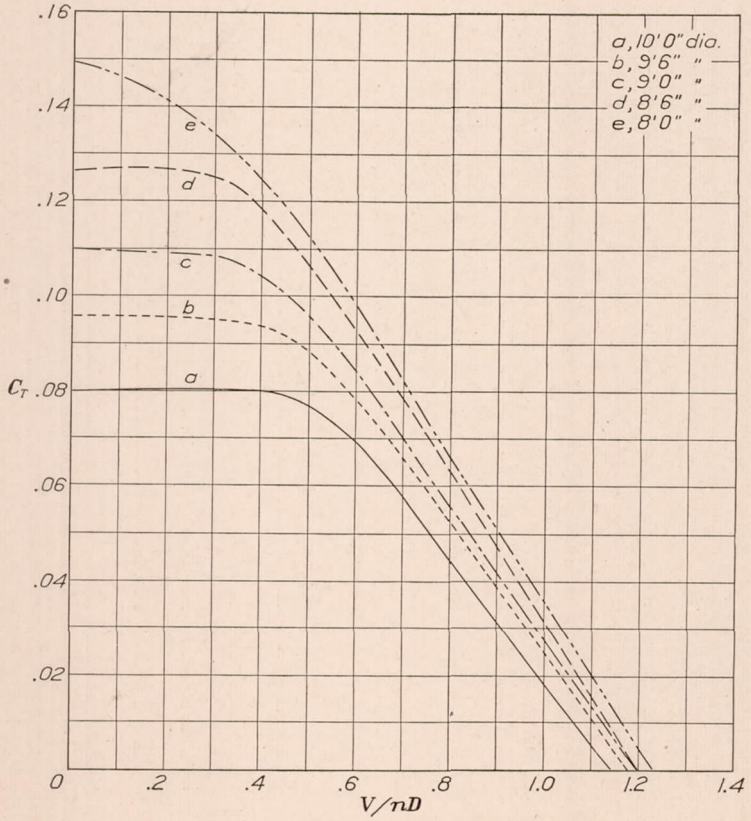

FIGURE 12.—Propeller No. 3792. (23° at 0.75 *R*)

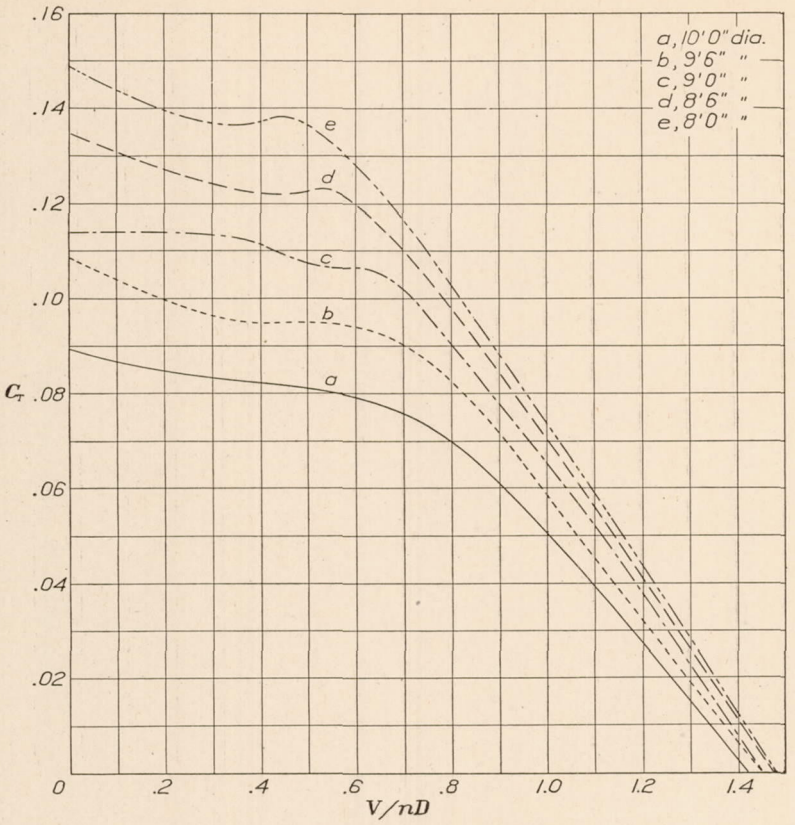

FIGURE 13.—Propeller No. 3792. (28° at 0.75 *R*)

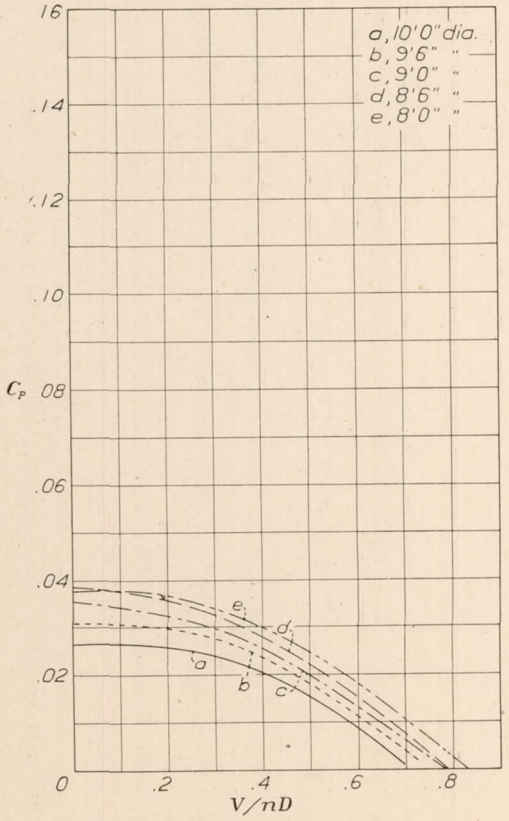

FIGURE 14.—Propeller No. 3792. (12° at 0.75 *R*)

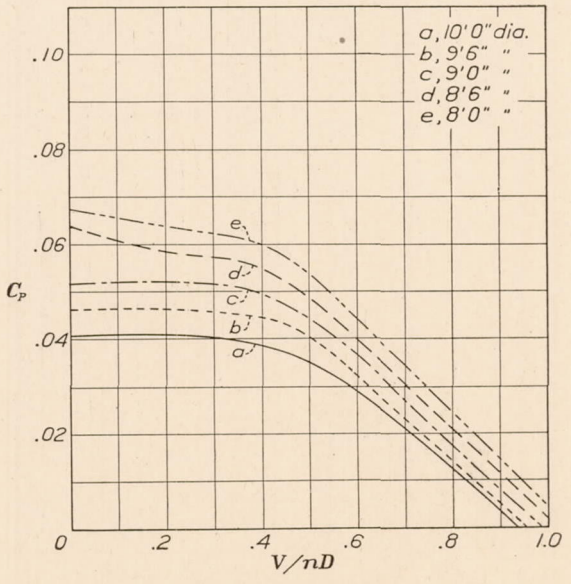

FIGURE 15.—Propeller No. 3792. (17° at 0.75 *R*)

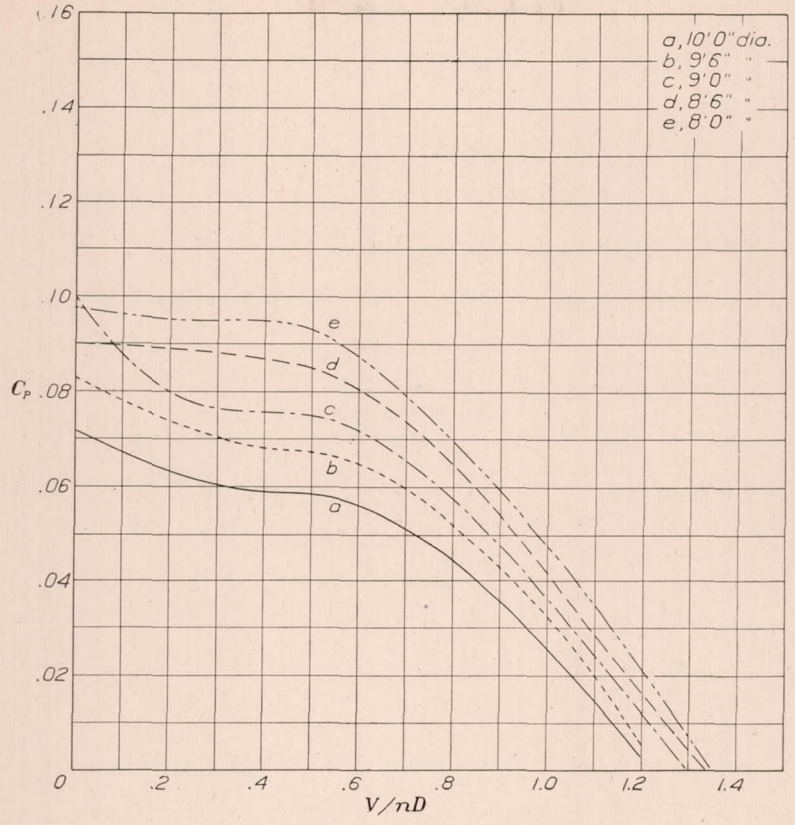

FIGURE 16.—Propeller No. 3792. (23° at 0.75 *R*)

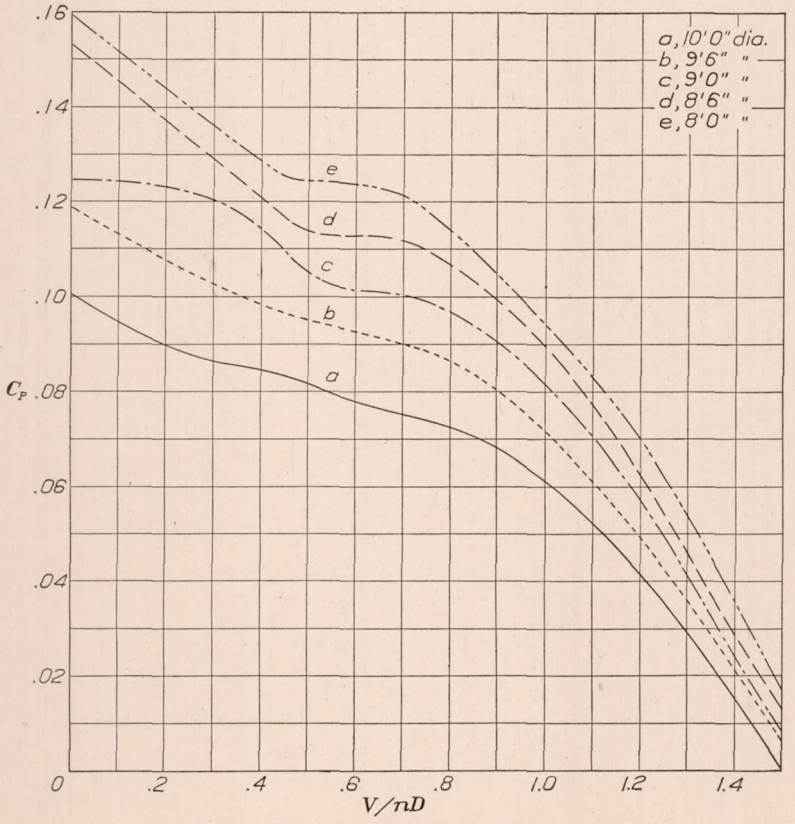

FIGURE 17.—Propeller No. 3792. (28° at 0.75 *R*)

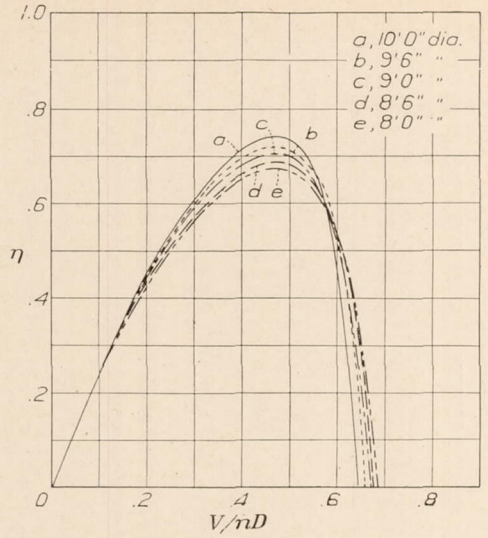

FIGURE 18.—Propeller No. 3792. (12° at 0.75 *R*)

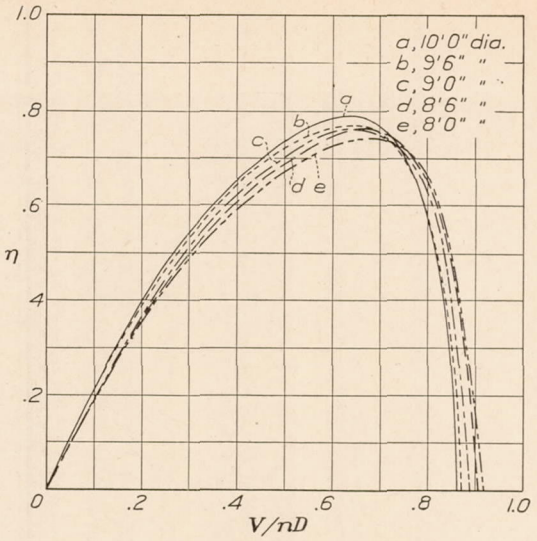

FIGURE 19.—Propeller No. 3792. (17° at 0.75 *R*)

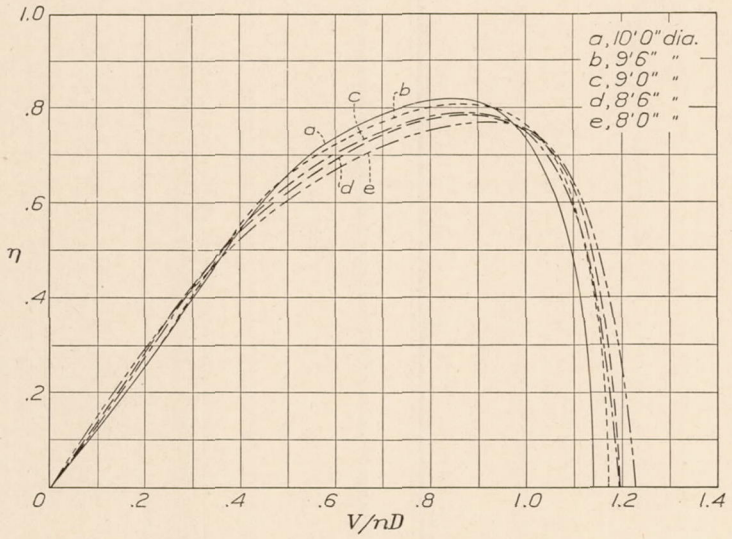

FIGURE 20.—Propeller No. 3792. (23° at 0.75 *R*)

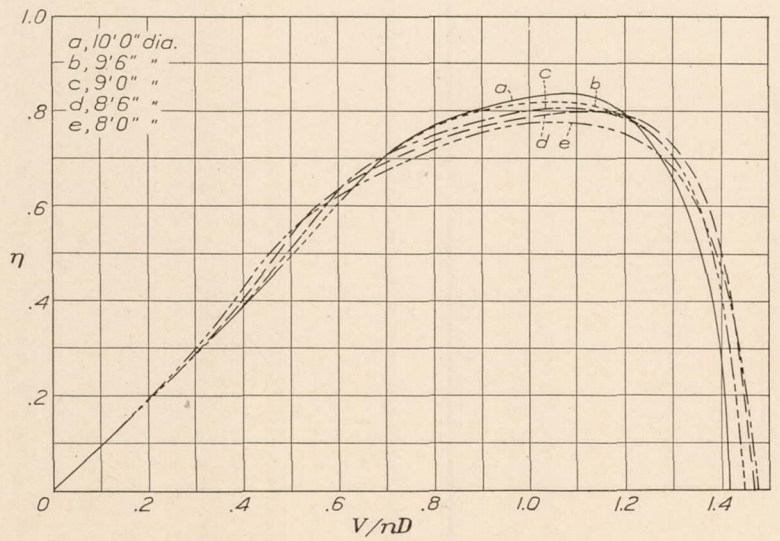

FIGURE 21.—Propeller No. 3792. (28° at 0.75 *R*)

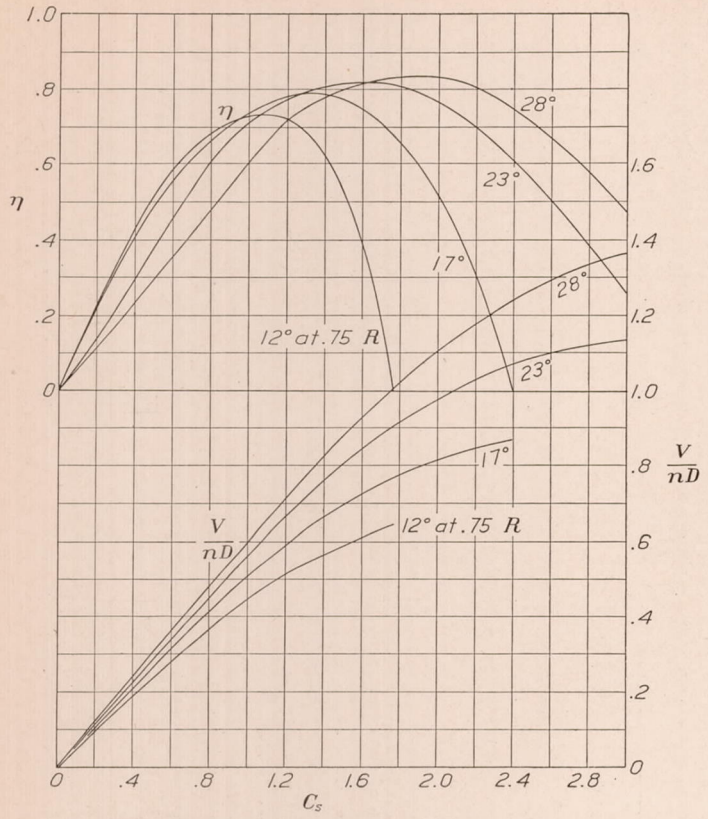

FIGURE 22.—Propeller No. 3792. Diameter, 10 feet

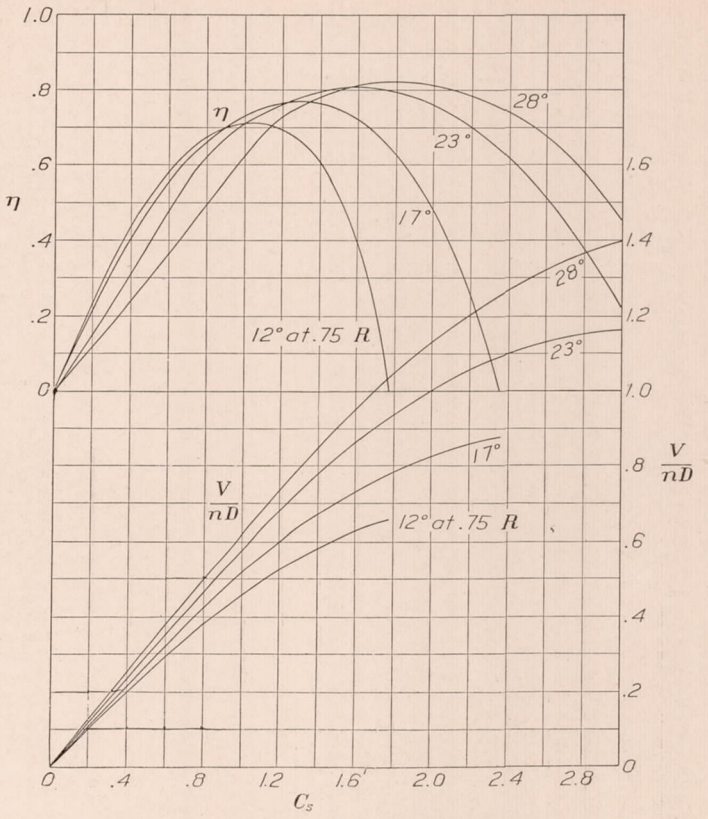

FIGURE 23.—Propeller No. 3792. Diameter, 9 feet 6 inches

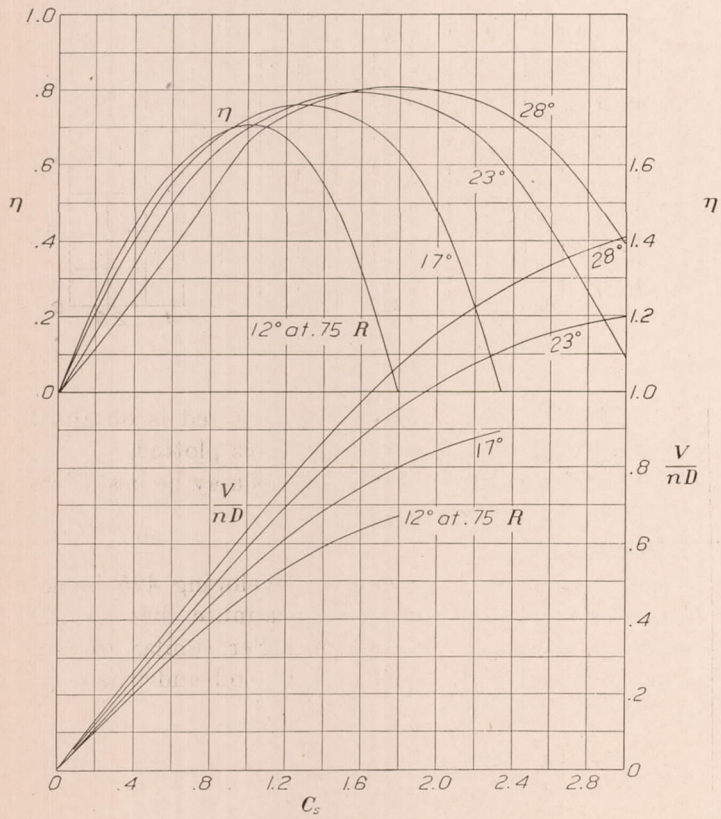

FIGURE 24.—Propeller No. 3792. Diameter, 9 feet

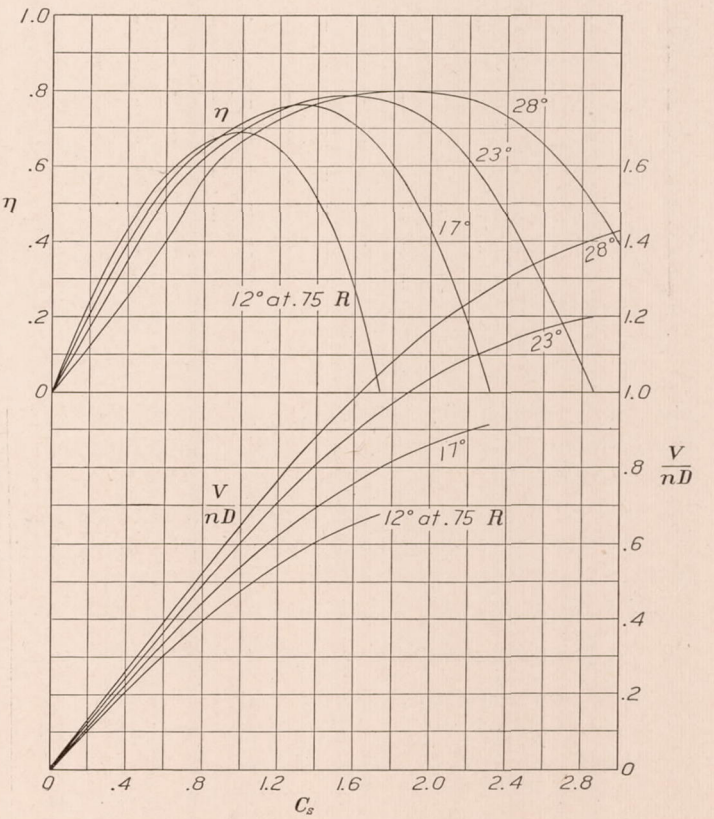

FIGURE 25.—Propeller No. 3792. Diameter, 8 feet 6 inches

result. (Fig. 4.) The blade width becomes more nearly uniform from hub to tip as the diameter is decreased. It is, therefore, impossible to attribute the change in characteristics entirely to any one of the variables, body interference, plan form, or thickness. Tests previously reported (Reference 2) were made with the diameter as the only variable and an approximation can be made as to how much of the change in body interference is due to change in the relative diameter of propeller and body only.

First considering all the propellers at the same pitch, it appears from Figures 18 to 21, inclusive, that each decrease of diameter causes a corresponding drop in maximum efficiency. The 20 per cent change in diameter from 10 feet to 8 feet results in about 6 per cent drop in maximum efficiency. The indications are (Reference 2) that about 2½ per cent of this is due to increase of body interference caused by the relatively larger body, the remainder, 3½ per cent, to change of plan form and thickness. There is some lack of uniformity in the curves in that there are slight shifts in the $\frac{V}{nD}$ for maximum efficiency, but these are within practical limits and the experimental error.

As is to be expected from an increase of blade width near the tip and thickness near the hub, large increases of thrust coefficients and power coefficients are noted, (Figs. 10 to 17, inclusive). At the $\frac{V}{nD}$ for maximum efficiency the thrust coefficient is 51 per cent higher for the 8-foot diameter than for the 10-foot diameter. Likewise, the power coefficient is 60 per cent higher. At the lowest pitch setting (12°) the thrust coefficient is 33 per cent higher and power coefficient 56 per cent higher. The results are in agreement with those of Reference 3, although the differences are greater due to the wider range of thicknesses and blade widths in these tests.

However, it is usually the problem to find the propeller for a given engine power, revolutions and forward velocity. In this case the coefficient C_s connecting these variables is very useful. The value of C_s is fixed at the start for a given case, and from the diagrams, Figures 22 to 26, inclusive, the efficiency is determined. The pitch setting required is obtained by interpolation between the settings plotted.

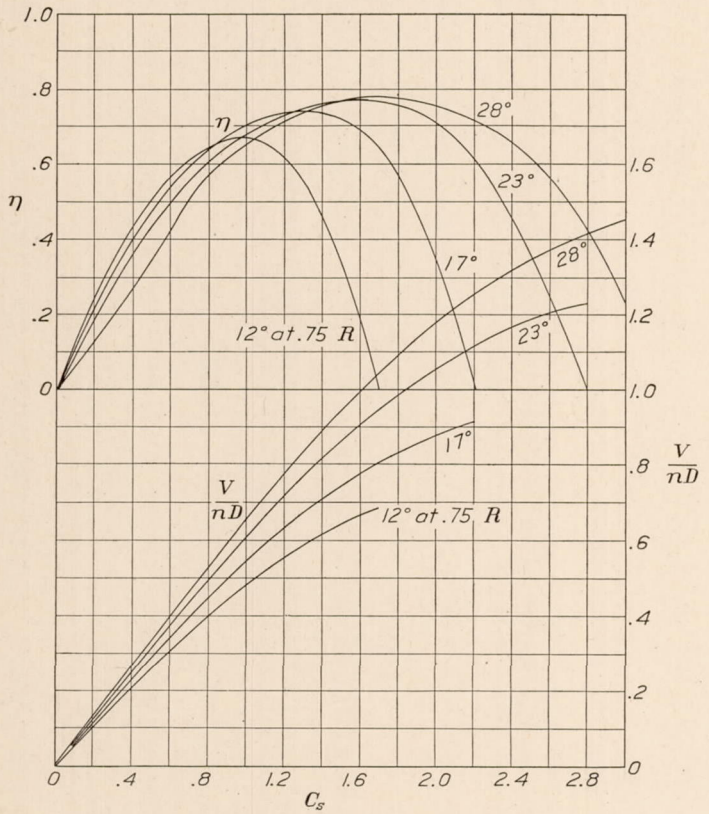

FIGURE 26.—Propeller No. 3792. Diameter, 8 feet

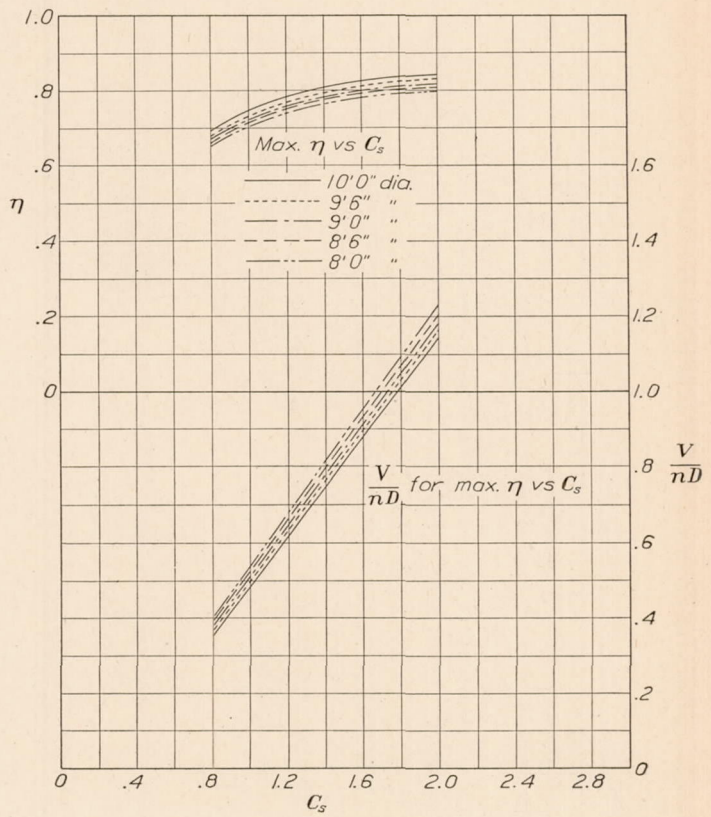

FIGURE 27

The application of these diagrams may be best illustrated by means of examples.

Example I:

An airplane with an engine developing 425 horsepower at 1,900 revolutions per minute flies at 150 miles per hour. A 10-foot propeller similar to No. 3792 is available. Should it be cut off and what will be the resulting efficiency?

We have $C_S = \sqrt{\frac{\rho V^5}{P n^2}}$.

Inserting the values from the problem and converting to consistent units:

$$C_s = \sqrt[5]{\frac{0.002378 \times \left(150 \times \frac{88}{60}\right)^5}{425 \times 550 \times \left(\frac{1900}{60}\right)^2}} = 1.394$$

$$\text{Also } \frac{V}{nD} = \frac{150 \times \frac{88}{60}}{\frac{1900}{60} \times 10} = \frac{220}{31.7 \times 10} = 0.695.$$

From the lower curves of Figure 22 at $C_s = 1.394$ and $\frac{V}{nD} = 0.695$, by interpolation the pitch setting required is found to be 19 degrees. At this setting and $C_s = 1.394$ the efficiency is found to be .795 from the upper curves.

The best efficiency at this C_s is .805 at 22 degrees setting. Referring to the lower curves at this setting and C_s, $\frac{V}{nD} = 0.745$.

Solving for D

$$D = \frac{220}{31.7 \times 0.745} = 9.34 \text{ feet.}$$

For best results then, a propeller geometrically similar to No. 3792, but 9.34 feet in diameter should be used. The difference between this and 10 feet suggests the possibility of advantage by cutting off the propeller.

From Figure 23, which applies to a propeller cut to 9.5 feet, at C_s 1.394 as before and now

$$\frac{V}{nD} = \frac{220}{31.7 \times 9.5} = 0.732$$

the efficiency is found to be 0.785 at 21° setting. This is 1 per cent less than the 0.795 efficiency for the 10-foot propeller. Therefore, the 10-foot diameter propeller set at 19° is better than the cut-down propeller. If the best propeller (9.34 feet at 22°) efficiency is corrected for increased body interference, using values from Reference 2, the efficiency is $0.805 - 0.008 = 0.797$. The 10-foot diameter propeller at hand is practically ideal for the purpose and should not be cut.

Example II:

An airplane fitted with an engine developing 300 horsepower at 2,000 revolutions per minute flies at 130 miles per hour. How should a 10-foot diameter propeller be cut to adapt it to the airplane?

$$\text{We have } C_s = \sqrt[5]{\frac{0.002378 \times \left(130 \times \frac{88}{60}\right)^5}{300 \times 550 \times \left(\frac{2000}{60}\right)^2}} = 1.268$$

$$\text{and } \frac{V}{nD} = \frac{130 \times \frac{88}{60}}{\frac{2000}{60} \times 10} = \frac{191}{33.4 \times 10} = 0.572.$$

From the diagrams, Figure 22, the propeller will have an efficiency of 0.750 at 14.5° setting. The best propeller would have an efficiency of 0.79 at a $\frac{V}{nD}$ of 0.66 with a diameter of 8.65 feet and a pitch setting of 20°. Correcting for body interference as before, the efficiency becomes $0.790 - 0.017 = 0.773$.

From the diagrams, Figure 25, for propellers cut to 8.5 feet diameter at $C_s = 1.268$ and

$$\frac{V}{nD} = \frac{191}{33.4 \times 8.5} = 0.674,$$

we find the efficiency to be 0.760 at a setting of 18.5°. Since the diameter is not critical, a 20 per cent change causing only 2½ per cent change of efficiency, it is sufficient to use this diameter. In fact, if the diagrams, Figure 27, for 8-foot diameter propellers are used in the same way, the efficiency drops to 0.74. The diagrams, Figure 24, for 9-foot diameter propellers give an efficiency of 0.76, the same as the 8.5-foot diameter.

For this application we may use the 10-foot diameter propeller cut down to 8.5 feet and gain about 1 per cent in efficiency. This propeller will be only $(0.773 - 0.76 = 0.013)$ 1.3 per cent less efficient than the best propeller, one of 8.65-foot diameter geometrically similar to the 10-foot diameter.

Example III:

An airplane is equipped with a 600-horsepower engine turning at 2,400 revolutions per minute. The estimated speed of the airplane is 180 miles per hour. How should a 10-foot diameter propeller be cut to adapt it to the airplane?

$$C_s = \sqrt[5]{\frac{0.002378 \times \left(180 \times \frac{88}{60}\right)^5}{600 \times 550 \times \left(\frac{2400}{60}\right)^2}} = 1.419$$

$$\text{and } \frac{V}{nD} = \frac{180 \times \frac{88}{60}}{\frac{2400}{60} \times 10} = \frac{264}{40 \times 10} = 0.660.$$

Figure 22 indicates that the propeller will have an efficiency of 0.765 at 16.5° setting.

If we cut the propeller to 8 feet the diagrams, Figure 26, apply.

$$C_s = 1.419 \text{ as before.}$$

$$\frac{V}{nD} = \frac{264}{40 \times 8} = 0.825.$$

$$\text{Efficiency} = 0.76 \text{ at } 23° \text{ setting.}$$

It appears that the cut-down propeller is practically as efficient as the 10-foot propeller.

It is possible to select another propeller which, at first sight, is better than either of the above. From the diagram, as in previous examples, we find that a

propeller 8.7 feet in diameter geometrically similar to the 10-foot propeller would have an efficiency of 0.805 when set at 22.5°. When corrected for increased body interference the efficiency is $(0.805-0.019)=0.796$.

There is another factor, however, not covered by the above charts which must be taken into account. Tests, soon to be published, have shown that above 1,000 feet per second tip speed the efficiency falls off. The tip speeds follow:

10 feet diameter $\pi \times 10 \times 40 = 1{,}258$ feet per second.
8.7 feet diameter $\pi \times 8.7 \times 40 = 1{,}093$ feet per second.
8 feet diameter $\pi \times 8 \times 40 = 1{,}008$ feet per second.

The efficiencies computed for the 10-foot and 8.7-foot diameter propellers will not be realized in practice. The 8-foot diameter propeller, therefore, represents about the best propeller for the application.

When propellers are operating at high tip speeds the increased body interference and adverse effects of thickness and plan form of cut-off propellers are less than the tip-speed losses and a net gain in efficiency will result if a smaller diameter is used to reduce the tip speed.

CONCLUSION

1. Changes of 20 per cent in the diameter of a 10-foot propeller due to cutting off the tips result in a loss of about 6 per cent in maximum propulsive efficiency at the same pitch setting.

2. The drop in efficiency is accompanied by increases of from 30 to 50 per cent in thrust coefficient and from 56 to 60 per cent in power coefficient.

3. A propeller adapted to a given engine and airplane by cutting off the tips will only be slightly less efficient than a specially designed propeller.

4. The practice of cutting off propellers is justified by these tests.

LANGLEY MEMORIAL AERONAUTICAL LABORATORY,
NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS, LANGLEY, VA., *December 10, 1929.*

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2. Weick, Fred E.: Full Scale Tests with a Series of Propellers of Different Diameters on a Single Fuselage. N. A. C. A. Technical Report No. 339 (1929).
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Ordinates of sections at various radii for propeller blade per drawing, Figure 3

Stations in per cent chord	42″ r upper	48″ r upper	54″ r upper	57″ r upper
	Inches	*Inches*	*Inches*	*Inches*
2.5	0.19	0.14	0.10	0.07
5.0	.27	.20	.14	.11
10.0	.36	.27	.18	.14
20.0	.43	.33	.22	.17
30.0	.45	.34	.23	.18
40.0	.45	.34	.23	.18
50.0	.43	.33	.22	.17
60.0	.40	.30	.20	.16
70.0	.34	.26	.17	.13
80.0	.25	.19	.13	.10
90.0	.16	.12	.08	.06
Rad. L. E.	.05	.03	.02	.02
Rad. T. E.		.03	.02	.01
Chord	6.70	5.22	3.33	2.25

The chord is divided into 10 equal parts, or stations, with the one at the leading edge subdivided into halves and quarters.

TABLE I.—OBSERVED TEST DATA

Propeller No. 3792. Diameter, 10 feet

SET AT 12° AT 0.75 R.

ρ	V m. p. h.	N r. p. m.	Q lb. ft.	T lb.	C_T	C_P	$\frac{V}{nD}$	η
0.002278	86.0	1,805	651	705	0.0343	0.0199	0.419	0.722
.002278	86.2	1,810	655	712	.0344	.0198	.419	.726
.002278	83.8	1,495	337	316	.0224	.0150	.493	.736
.002275	88.5	1,820	637	674	.0322	.0191	.428	.720
.002275	88.6	1,830	639	679	.0321	.0190	.426	.720
.002267	86.9	1,530	337	310	.0210	.0143	.499	.731
.002267	91.2	1,805	598	608	.0297	.0183	.444	.719
.002267	91.8	1,805	599	621	.0303	.0183	.447	.740
.002267	94.7	1,825	597	607	.0290	.0179	.456	.739
.002267	95.0	1,825	595	604	.0288	.0179	.458	.735
.002265	83.0	1,800	670	743	.0364	.0206	.406	.717
.002265	83.5	1,800	672	745	.0365	.0206	.408	.724
.002265	79.4	1,480	357	358	.0260	.0162	.472	.755
.002265	80.0	1,820	707	802	.0384	.0214	.387	.695
.002265	80.4	1,820	707	799	.0383	.0214	.389	.696
.002265	77.2	1,500	378	383	.0270	.0167	.453	.730
.002265	77.2	1,795	706	816	.0401	.0219	.379	.694
.002265	78.1	1,815	709	813	.0392	.0214	.379	.694
.002265	74.8	1,480	388	404	.0292	.0176	.445	.735
.002258	73.4	1,810	736	871	.0425	.0226	.356	.669
.002258	74.2	1,815	737	871	.0422	.0224	.360	.679
.002261	68.3	1,490	405	443	.0317	.0182	.403	.702
.002261	65.6	1,800	771	960	.0471	.0237	.321	.639
.002261	62.8	1,805	775	982	.0480	.0237	.306	.620
.002261	61.4	1,495	464	556	.0396	.0207	.361	.690
.002264	61.7	1,800	789	1,007	.0493	.0242	.302	.615
.002264	61.0	1,805	792	1,017	.0495	.0242	.298	.610
.002264	58.2	1,520	496	620	.0426	.0214	.337	.671
.002264	56.3	1,810	824	1,088	.0526	.0251	.274	.574
.002264	56.8	1,810	826	1,084	.0525	.0252	.276	.575
.002264	49.4	1,480	480	641	.0465	.0218	.294	.628
.002270	24.9	1,810	871	1,289	.0624	.0264	.121	.286
.002270	27.1	1,810	874	1,296	.0626	.0266	.132	.310
.002270	22.4	1,480	518	875	.0635	.0235	.133	.360
.002281	103.8	1,745	426	372	.0192	.0138	.523	.726
.002281	103.2	1,660	324	249	.0142	.0116	.547	.670
.002281	102.6	1,535	226	131	.0087	.0095	.587	.542
.002281	102.0	1,450	150	48	.0036	.0070	.619	.316
.002281	101.7	1,370	92	−15	.0012	.0048	.652	----------
.002281	101.5	1,270	31	−84	.0082	.0019	.704	----------

Propeller No. 3792. Diameter, 10 feet

SET AT 23° AT 0.75 R.

ρ	V m. p. h.	N r. p. m.	Q lb. ft.	T lb.	C_T	C_P	$\frac{V}{nD}$	η
0.002247	86.0	1,335	990	781	0.0722	0.0560	0.566	0.730
.002247	84.5	1,325	987	782	.0714	.0565	.561	.709
.002247	88.6	1,345	991	775	.0689	.0551	.580	.725
.002247	88.6	1,340	989	770	.0688	.0552	.583	.726
.002236	92.1	1,340	991	763	.0685	.0559	.605	.741
.002236	91.6	1,340	988	758	.0681	.0556	.601	.736
.002236	94.4	1,360	991	749	.0653	.0544	.610	.732
.002236	94.4	1,355	989	750	.0659	.0544	.612	.741
.002233	105.2	1,365	996	718	.0621	.0540	.679	.781
.002233	104.4	1,360	991	715	.0624	.0544	.675	.774
.002226	103.6	1,295	836	583	.0562	.0505	.704	.789
.002226	104.0	1,225	736	501	.0540	.0499	.746	.808
.002226	102.6	1,170	624	405	.0479	.0462	.771	.800
.002226	103.2	1,100	505	316	.0421	.0424	.826	.820
.002226	102.1	1,040	414	247	.0369	.0389	.864	.820
.002226	101.6	965	300	162	.0281	.0324	.926	.806
.002226	101.6	900	213	100	.0199	.0267	.994	.742
.002226	101.6	825	118	42	.0099	.0176	1.082	.613
.002218	102.3	780	47	−2	−.0005	.0078	1.156	-------
.002218	102.3	770	30	−15	−.0041	.0051	1.170	-------
.002224	82.4	1,300	993	802	.0766	.0598	.556	.714
.002224	81.4	1,300	989	797	.0763	.0595	.551	.706
.002224	79.2	1,305	987	804	.0763	.0589	.535	.693
.002227	79.0	1,305	989	802	.0761	.0589	.533	.690
.002227	73.8	1,305	989	777	.0736	.0589	.497	.621
.002227	75.2	1,310	986	781	.0737	.0582	.505	.640
.002230	70.2	1,305	988	832	.0789	.0588	.473	.634
.002230	69.2	1,310	987	824	.0775	.0582	.465	.619
.002230	62.9	1,310	991	843	.0794	.0586	.423	.572
.002230	63.5	1,300	987	842	.0805	.0591	.430	.585
.002233	56.4	1,310	991	851	.0801	.0586	.379	.518
.002233	53.2	1,300	987	836	.0799	.0591	.360	.486
.002239	21.6	1,240	979	764	.0801	.0647	.153	.188
.002239	22.2	1,240	981	764	.0801	.0647	.157	.195

Propeller No. 3792. Diameter, 10 feet

SET AT 17° AT 0.75 R.

ρ	V m. p. h.	N r. p. m.	Q lb. ft.	T lb.	C_T	C_P	$\frac{V}{nD}$	η
0.002361	86.6	1,660	1,052	1,006	0.0556	0.0365	0.459	0.700
.002361	87.3	1,650	1,048	1,004	.0561	.0368	.465	.709
.002361	88.8	1,660	1,048	998	.0553	.0364	.470	.715
.002353	89.7	1,660	1,048	991	.0551	.0364	.475	.720
.002353	91.4	1,660	1,051	984	.0547	.0366	.486	.727
.002353	92.1	1,660	1,049	982	.0546	.0366	.488	.729
.002353	94.8	1,680	1,050	970	.0525	.0358	.496	.727
.002353	95.2	1,680	1,049	963	.0521	.0356	.499	.730
.002339	103.8	1,720	1,047	923	.0481	.0342	.530	.745
.002339	103.6	1,720	1,047	923	.0481	.0342	.530	.745
.002339	103.5	1,660	927	824	.0461	.0325	.549	.779
.002339	102.9	1,630	850	738	.0427	.0310	.555	.765
.002339	102.8	1,550	729	618	.0396	.0293	.583	.786
.002339	102.8	1,500	652	541	.0371	.0281	.602	.795
.002339	102.4	1,450	522	440	.0322	.0254	.621	.786
.002339	101.8	1,400	501	388	.0305	.0248	.639	.785
.002333	102.5	1,350	428	321	.0272	.0228	.667	.795
.002333	101.4	1,300	370	264	.0241	.0213	.686	.776
.002333	101.2	1,235	296	195	.0197	.0189	.721	.753
.002333	101.6	1,180	234	137	.0152	.0163	.756	.705
.002333	101.6	1,100	144	64	.0081	.0115	.810	.573
.002333	100.8	1,045	97	26	.0026	.0086	.845	.361
.002333	101.0	1,000	48	−17	.0026	.0046	.888	----------
.002333	101.0	960	12	−49	.0082	.0012	.925	----------
.002339	82.4	1,640	1,049	1,017	.0583	.0378	.441	.680
.002339	82.4	1,635	1,046	1,023	.0591	.0378	.444	.694
.002342	78.3	1,630	1,045	1,050	.0607	.0378	.422	.678
.002342	78.3	1,630	1,046	1,044	.0602	.0378	.422	.672
.002342	78.3	1,620	1,046	1,070	.0625	.0382	.404	.660
.002342	74.4	1,620	1,046	1,065	.0621	.0382	.405	.659
.002345	74.5	1,600	1,049	1,092	.0655	.0395	.386	.641
.002345	70.2	1,600	1,045	1,089	.0652	.0392	.390	.650
.002345	70.8	1,600	1,049	1,131	.0679	.0395	.353	.606
.002345	64.1	1,600	1,047	1,125	.0674	.0392	.362	.622
.002340	65.7	1,595	1,049	1,154	.0696	.0397	.340	.596
.002340	61.6	1,590	1,045	1,156	.0701	.0398	.338	.595
.002340	61.0	1,585	1,049	1,198	.0735	.0402	.305	.559
.002340	54.9	1,580	1,047	1,199	.0739	.0405	.298	.545
.002346	53.4	1,570	1,049	-------	-------	.0410	.145	----------
.002346	26.0	1,570	1,049	-------	-------	.0410	.153	----------

Propeller No. 3792. Diameter, 10 feet

SET AT 28° AT 0.75 R.

ρ	V m. p. h.	N r. p. m.	Q lb. ft.	T lb.	C_T	C_P	$\frac{V}{nD}$	η
0.002371	84.2	1,120	1,019	646	0.0782	0.0772	0.662	0.670
.002371	83.6	1,110	1,009	644	.0793	.0779	.663	.675
.002371	87.2	1,140	1,018	645	.0753	.0746	.673	.679
.002371	88.4	1,130	1,012	642	.0764	.0756	.688	.695
.002368	90.6	1,140	1,016	644	.0752	.0743	.699	.707
.002368	90.5	1,125	1,013	641	.0771	.0763	.707	.715
.002360	93.4	1,145	1,015	639	.0742	.0740	.717	.719
.002360	93.8	1,145	1,014	634	.0736	.0740	.721	.718
.002357	103.3	1,150	1,016	618	.0714	.0735	.791	.769
.002357	102.5	1,150	1,015	614	.0710	.0735	.785	.758
.002354	102.1	1,115	940	565	.0695	.0726	.806	.771
.002354	102.4	1,050	824	487	.0576	.0718	.858	.808
.002346	101.7	1,000	681	386	.0592	.0656	.895	.807
.002349	101.4	950	612	334	.0567	.0653	.940	.816
.002349	101.4	900	518	270	.0511	.0615	.992	.825
.002349	101.5	840	406	201	.0437	.0553	1.063	.840
.002349	101.2	800	340	161	.0385	.0511	1.115	.840
.002349	100.7	750	261	112	.0305	.0446	1.181	.807
.002349	100.5	710	193	72	.0219	.0368	1.246	.741
.002349	100.6	650	96	23	.0083	.0219	1.360	.517
.002349	100.6	600	14	−17	−.0072	.0037	1.475	-------
.002349	80.7	1,130	1,013	648	.0778	.0761	.628	.642
.002349	79.3	1,130	1,012	643	.0771	.0761	.617	.625
.002358	77.3	1,120	1,014	645	.0785	.0777	.608	.615
.002358	77.3	1,120	1,012	643	.0783	.0775	.608	.615
.002361	74.0	1,110	1,012	643	.0795	.0786	.587	.594
.002361	72.8	1,105	1,008	638	.0796	.0789	.580	.586
.002361	71.0	1,110	1,014	641	.0793	.0790	.563	.565
.002361	70.7	1,110	1,012	637	.0789	.0786	.560	.562
.002352	66.4	1,100	1,017	638	.0807	.0806	.530	.531
.002352	64.0	1,095	1,010	632	.0808	.0810	.514	.513
.002355	62.2	1,090	1,014	631	.0813	.0822	.502	.496
.002355	58.3	1,090	1,010	622	.0802	.0818	.471	.462
.002358	56.0	1,070	1,012	619	.0825	.0846	.460	.449
.002358	53.4	1,070	1,009	609	.0814	.0844	.439	.424
.002362	19.6	1,025	997	585	.0849	.0907	.168	.158
.002362	20.7	1,020	992	582	.0853	.0911	.179	.168

TABLE I.—OBSERVED TEST DATA—Continued

Propeller No. 3792. Diameter, 9 feet 6 inches

SET AT 12° AT 0.75 R.

ρ	V m. p. h.	N r. p. m.	Q lb. ft.	T lb.	C_T	C_P	$\frac{V}{nD}$	η
0.002369	86.3	1,890	653	718	0.0375	0.0225	0.423	0.705
.002369	83.5	1,890	657	742	.0388	.0227	.409	.899
.002369	82.2	1,600	375	374	.0273	.0181	.476	.718
.002366	89.1	1,900	651	709	.0366	.0223	.434	.712
.002366	88.1	1,900	651	714	.0369	.0223	.429	.710
.002358	89.1	1,900	632	688	.0358	.0217	.434	.715
.002358	89.2	1,900	632	686	.0357	.0217	.435	.715
.002358	102.1	1,900	489	457	.0239	.0169	.498	.704
.002340	102.4	1,895	488	460	.0242	.0169	.500	.714
.002340	83.6	1,910	688	783	.0404	.0234	.405	.699
.002352	83.6	1,915	692	786	.0403	.0234	.404	.696
.002352	81.3	1,595	366	369	.0273	.0179	.472	.721
.002352	80.4	1,900	707	827	.0431	.0244	.392	.693
.002352	80.7	1,900	707	824	.0429	.0244	.393	.691
.002352	78.0	1,590	390	407	.0303	.0192	.454	.717
.002352	57.8	1,900	724	866	.0450	.0249	.370	.669
.002355	76.9	1,900	726	865	.0450	.0250	.375	.675
.002355	74.7	1,580	403	437	.0329	.0200	.438	.721
.002355	73.8	1,900	747	905	.0471	.0256	.360	.662
.002355	75.3	1,905	751	904	.0467	.0256	.366	.668
.002355	73.5	1,595	417	461	.0340	.0203	.427	.715
.002355	71.9	1,910	764	940	.0485	.0261	.349	.649
.002347	74.6	1,910	762	924	.0476	.0260	.362	.663
.002347	73.0	1,560	403	438	.0339	.0206	.433	.713
.002347	67.6	1,900	776	985	.0513	.0267	.330	.634
.002350	67.0	1,900	774	987	.0515	.0266	.327	.633
.002350	63.4	1,600	466	562	.0413	.0226	.367	.670
.002350	58.0	1,890	787	1,066	.0561	.0274	.284	.582
.002350	67.4	1,900	787	999	.0520	.0271	.329	.631
.002350	56.4	1,570	483	613	.0467	.0244	.333	.637
.002350	26.2	1,900	899	1,383	.0719	.0308	.128	.298
.002359	26.3	1,900	900	1,372	.0713	.0309	.128	.296
.002359	22.3	1,610	576	995	.0720	.0276	.128	.335
.002343	100.6	1,800	416	375	.0218	.0160	.518	.705
.002343	100.7	1,720	346	285	.0182	.0146	.541	.675
.002343	100.7	1,610	263	186	.0135	.0126	.579	.620
.002343	100.5	1,510	178	85	.0070	.0097	.616	.446
.002343	100.1	1,390	91	−15	−.0014	.0058	.666	----
.002343	100.0	1,310	58	−52	−.0057	.0042	.707	----

Propeller No. 3792. Diameter, 9 feet 6 inches

SET AT 23° AT 0.75 R.

ρ	V m. p. h.	N r. p. m.	Q lb. ft.	T lb.	C_T	C_P	$\frac{V}{nD}$	η
0.002303	85.8	1,420	1,024	845	0.0806	0.0644	0.560	0.701
.002303	88.8	1,410	1,022	827	.0799	.0652	.584	.715
.002300	93.0	1,420	1,024	810	.0774	.0645	.606	.727
.002300	94.2	1,415	1,020	803	.0770	.0649	.616	.731
.002297	102.5	1,440	1,012	761	.0709	.0623	.660	.751
.002297	102.6	1,440	1,010	759	.0706	.0620	.660	.752
.002297	104.0	1,375	879	640	.0652	.0592	.700	.771
.002286	104.5	1,380	881	641	.0651	.0593	.701	.771
.002286	103.5	1,350	837	605	.0641	.0588	.710	.774
.002286	103.9	1,350	837	605	.0641	.0588	.714	.778
.002286	103.8	1,280	728	507	.0599	.0568	.751	.792
.002289	103.4	1,280	728	507	.0599	.0568	.749	.790
.002289	102.7	1,200	579	378	.0507	.0514	.791	.781
.002289	102.4	1,200	583	385	.0514	.0518	.790	.783
.002289	102.2	1,120	481	308	.0475	.0489	.846	.822
.002289	102.6	1,130	481	309	.0468	.0485	.840	.811
.002282	101.9	1,050	364	214	.0375	.0424	.897	.795
.002282	101.8	1,050	364	215	.0377	.0424	.896	.798
.002282	102.7	990	269	147	.0290	.0351	.960	.794
.002282	102.6	990	269	146	.0288	.0351	.960	.788
.002282	102.1	930	204	99	.0222	.0301	1.019	.750
.002282	102.3	925	199	97	.0219	.0297	1.028	.757
.002282	101.5	870	134	54	.0138	.0227	1.081	.659
.002282	101.2	800	39	−8	−.0024	.0077	1.172	----
.002282	101.0	770	32	−14	−.0045	.0068	1.216	----
.002291	82.0	1,400	1,032	865	.0853	.0674	.543	.687
.002291	79.5	1,390	1,022	869	.0868	.0678	.530	.679
.002291	79.2	1,395	1,028	875	.0869	.0675	.526	.677
.002291	79.7	1,395	1,027	870	.0864	.0672	.530	.680
.002291	75.3	1,400	1,031	898	.0885	.0671	.498	.656
.002291	76.4	1,395	1,027	890	.0883	.0673	.507	.665
.002294	65.0	1,390	1,029	934	.0922	.0678	.434	.591
.002294	67.4	1,390	1,028	920	.0919	.0678	.449	.609
.002297	60.3	1,390	1,032	947	.0945	.0683	.402	.556
.002297	62.8	1,390	1,028	930	.0927	.0676	.419	.575
.002307	22.0	1,305	1,022	849	.0955	.0759	.157	.197
.002307	24.9	1,300	1,018	859	.0975	.0765	.177	.226
.002307	20.6	1,310	1,024	855	.0956	.0757	.146	.184

Propeller No. 3792. Diameter, 9 feet 6 inches

SET AT 17° AT 0.75 R.

ρ	V m. p. h.	N r. p. m.	Q lb. ft.	T lb.	C_T	C_P	$\frac{V}{nD}$	η
0.002331	82.4	1,735	1,064	1,061	0.0669	0.0436	0.440	0.675
.002331	83.4	1,730	1,042	1,054	.0668	.0436	.446	.684
.002328	89.1	1,760	1,039	1,022	.0627	.0420	.469	.700
.002328	91.2	1,755	1,035	1,013	.0625	.0422	.481	.713
.002328	92.2	1,770	1,038	1,014	.0615	.0416	.482	.713
.002328	93.3	1,780	1,038	1,002	.0600	.0412	.486	.708
.002320	97.7	1,795	1,039	980	.0579	.0406	.504	.718
.002320	96.5	1,785	1,038	986	.0590	.0411	.501	.720
.002314	106.8	1,840	1,034	939	.0530	.0386	.537	.737
.002314	106.0	1,840	1,032	937	.0529	.0386	.533	.730
.002314	105.2	1,750	848	748	.0467	.0350	.557	.744
.002307	105.6	1,750	850	760	.0475	.0352	.557	.754
.002307	105.3	1,650	709	611	.0430	.0330	.591	.770
.002307	105.3	1,650	709	611	.0430	.0330	.591	.770
.002307	104.2	1,550	575	473	.0377	.0303	.622	.775
.002307	104.1	1,555	577	471	.0373	.0302	.620	.766
.002302	103.5	1,450	429	331	.0302	.0259	.661	.771
.002302	103.5	1,450	430	333	.0304	.0260	.661	.774
.002302	103.6	1,350	324	226	.0238	.0226	.710	.747
.002310	103.4	1,350	324	228	.0239	.0225	.709	.753
.002310	103.3	1,260	231	137	.0165	.0184	.759	.678
.002302	102.7	1,150	115	46	.0066	.0110	.827	.500
.002302	102.2	1,050	52	−19	−.0033	.0059	.901	----
.002302	102.5	1,025	27	−38	−.0069	.0032	.926	----
.002311	78.8	1,740	1,043	1,082	.0684	.0436	.420	.659
.002311	80.4	1,740	1,039	1,068	.0674	.0434	.428	.665
.002311	73.8	1,740	1,045	1,103	.0697	.0437	.393	.626
.002311	76.3	1,720	1,039	1,089	.0705	.0444	.411	.653
.002314	71.6	1,710	1,043	1,125	.0734	.0451	.388	.631
.002314	73.3	1,710	1,040	1,106	.0722	.0450	.397	.637
.002317	61.7	1,705	1,045	1,189	.0780	.0454	.335	.575
.002317	64.2	1,705	1,041	1,165	.0765	.0452	.349	.590
.002317	59.7	1,705	1,045	1,203	.0790	.0454	.324	.563
.002317	62.2	1,705	1,041	1,181	.0775	.0452	.338	.579
.002323	25.8	1,680	1,046	1,352	.0911	.0466	.142	.278
.002323	27.3	1,680	1,042	1,357	.0913	.0465	.150	.296

Propeller No. 3792. Diameter, 9 feet 6 inches

SET AT 28° AT 0.75 R.

ρ	V m. p. h.	N r. p. m.	Q lb. ft.	T lb.	C_T	C_P	$\frac{V}{nD}$	η
0.002326	84.4	1,180	1,014	679	0.0926	0.0915	0.662	0.670
.002326	83.5	1,170	1,007	675	.0937	.0925	.661	.669
.002326	86.4	1,200	1,012	678	.0895	.0885	.666	.673
.002326	87.0	1,190	1,004	673	.0904	.0892	.677	.685
.002316	90.3	1,195	1,009	676	.0905	.0894	.700	.709
.002316	91.0	1,185	1,005	668	.0908	.0904	.711	.715
.002316	93.6	1,200	1,015	669	.0887	.0891	.722	.719
.002316	94.0	1,200	1,009	662	.0878	.0886	.725	.718
.002316	96.5	1,215	1,012	663	.0857	.0864	.736	.731
.002313	96.8	1,200	1,004	657	.0873	.0880	.747	.741
.002313	103.1	1,225	1,008	641	.0818	.0849	.780	.751
.002313	102.6	1,210	1,002	640	.0836	.0864	.785	.759
.002313	102.6	1,160	912	570	.0810	.0857	.819	.773
.002305	102.6	1,160	912	573	.0816	.0860	.819	.776
.002305	101.8	1,105	808	493	.0775	.0838	.853	.789
.002305	102.2	1,105	810	495	.0775	.0840	.857	.790
.002305	101.9	1,050	677	393	.0684	.0779	.898	.788
.002305	101.9	1,050	677	399	.0695	.0779	.898	.801
.002305	101.4	1,000	604	344	.0659	.0765	.940	.809
.002305	101.2	1,000	606	344	.0659	.0768	.937	.804
.002305	101.2	960	543	298	.0620	.0747	.977	.810
.002305	101.7	960	544	302	.0628	.0749	.981	.824
.002305	101.1	900	433	228	.0540	.0678	1.040	.829
.002305	101.1	855	344	171	.0448	.0596	1.095	.822
.002298	100.5	795	246	110	.0335	.0495	1.170	.791
.002298	101.0	760	215	89	.0296	.0473	1.230	.769
.002298	100.8	715	148	54	.0203	.0369	1.303	.717
.002298	100.3	650	57	4	.0018	.0172	1.430	.151
.002298	100.8	615	6	−20	−.0102	.0020	1.516	----
.002307	81.1	1,188	1,009	678	.0934	.0918	.637	.648
.002307	80.6	1,180	1,008	675	.0929	.0918	.632	.639
.002307	77.6	1,180	1,005	676	.0930	.0915	.609	.618
.002307	76.4	1,180	999	671	.0924	.0906	.600	.611
.002307	73.8	1,175	1,012	674	.0936	.0931	.582	.585
.002307	73.9	1,170	1,004	672	.0943	.0930	.585	.593
.002310	67.6	1,160	1,005	669	.0951	.0944	.540	.544
.002310	66.8	----	----	666	----	----	----	----
.002310	66.8	1,160	997	663	.0943	.0935	.533	.537
.002313	62.1	1,160	1,009	664	.0944	.0947	.496	.494
.002313	61.4	1,155	1,002	659	.0944	.0951	.492	.488
.002313	53.4	1,140	1,001	643	.0946	.0971	.434	.423
.002313	51.6	1,135	996	634	.0941	.0976	.421	.406
.002319	20.7	1,070	990	603	.1005	.1091	.179	.165
.002319	20.1	1,065	984	600	.1008	.1095	.175	.161

TABLE I.—OBSERVED TEST DATA—Continued

Propeller No. 3792. Diameter, 9 feet

SET AT 12° AT 0.75 R.

ρ	V m. p. h.	N r. p. m.	Q lb. ft.	T lb.	C_T	C_P	$\frac{V}{nD}$	η
0.002272	84.4	1,990	587	670	0.0409	0.0250	0.415	0.679
.002272	85.0	1,990	589	677	.0413	.0250	.418	.690
.002272	83.5	1,695	339	339	.0285	.0199	.482	.690
.002264	88.3	1,990	558	621	.0380	.0239	.434	.690
.002264	88.6	1,990	559	624	.0381	.0239	.435	.693
.002264	90.0	1,990	549	601	.0368	.0234	.442	.695
.002264	90.4	2,000	554	607	.0368	.0234	.442	.695
.002264	89.0	1,700	315	299	.0251	.0184	.512	.698
.002254	94.5	2,020	554	594	.0354	.0231	.457	.700
.002254	94.8	2,025	554	594	.0352	.0230	.458	.701
.002252	81.7	2,020	626	748	.0446	.0261	.396	.679
.002252	81.0	2,020	630	755	.0451	.0261	.392	.677
.002252	78.9	1,710	374	398	.0332	.0218	.451	.687
.002252	76.6	2,000	645	794	.0484	.0275	.374	.658
.002252	76.8	2,000	645	799	.0486	.0275	.375	.663
.002252	74.0	1,680	382	432	.0373	.0230	.431	.699
.002254	71.5	2,000	653	829	.0504	.0278	.350	.634
.002254	71.1	2,000	655	837	.0510	.0278	.348	.638
.002254	69.8	1,700	414	486	.0409	.0243	.401	.675
.002254	66.8	2,000	685	903	.0550	.0291	.326	.616
.002254	65.0	2,005	689	921	.0558	.0290	.317	.610
.002254	62.9	1,710	436	546	.0455	.0250	.359	.653
.002258	61.7	2,000	704	944	.0574	.0298	.302	.581
.002258	59.8	1,990	699	956	.0587	.0300	.294	.575
.002258	57.3	1,730	478	631	.0513	.0271	.324	.613
.002261	55.2	2,010	720	1,017	.0610	.0302	.269	.544
.002261	53.2	2,010	723	1,033	.0620	.0303	.259	.530
.002261	51.1	1,710	486	673	.0558	.0282	.292	.576
.002264	26.6	2,020	818	1,346	.0798	.0339	.129	.303
.002264	26.6	2,020	818	1,345	.0798	.0339	.129	.303
.002264	21.9	1,705	513	901	.0751	.0299	.126	.316
.002277	102.1	1,980	468	455	.0280	.0200	.504	.705
.002277	102.1	1,900	391	360	.0241	.0182	.525	.694
.002277	101.0	1,800	323	269	.0200	.0168	.549	.651
.002277	100.9	1,700	244	167	.0139	.0142	.580	.570
.002277	100.9	1,600	180	94	.0088	.0119	.616	.461
.002277	100.7	1,500	120	27	.0029	.0090	.656	.212
.002277	100.9	1,405	69	−38	−.0046	.0059	.701	-------
.002277	100.2	1,320	24	−90	−.0124	.0023	.744	-------

Propeller No. 3792. Diameter, 9 feet

SET AT 23° AT 0.75 R.

ρ	V m. p. h.	N r. p. m.	Q lb. ft.	T lb.	C_T	C_P	$\frac{V}{nD}$	η
0.002281	85.0	1,480	1,004	859	0.0943	0.0770	0.562	0.688
.002281	84.3	1,485	1,002	855	.0934	.0762	.555	.680
.002273	87.2	1,520	1,006	851	.0890	.0734	.561	.681
.002273	87.4	1,520	1,006	844	.0882	.0734	.562	.675
.002273	90.3	1,530	1,008	840	.0868	.0725	.577	.690
.002273	91.2	1,530	1,005	833	.0860	.0724	.583	.693
.002270	93.4	1,530	1,008	826	.0854	.0726	.597	.702
.002270	94.4	1,530	1,004	820	.0845	.0724	.603	.704
.002259	103.7	1,560	1,009	793	.0791	.0704	.650	.731
.002259	103.5	1,550	1,008	787	.0796	.0712	.653	.730
.002259	104.2	1,500	886	679	.0732	.0668	.679	.744
.002259	103.3	1,505	890	882	.0732	.0666	.671	.738
.002259	102.9	1,420	769	571	.0689	.0646	.708	.755
.002252	102.8	1,415	766	569	.0692	.0650	.710	.756
.002252	102.3	1,355	668	483	.0641	.0619	.738	.765
.002252	102.2	1,350	668	480	.0641	.0623	.740	.762
.002252	102.2	1,290	595	418	.0612	.0607	.775	.782
.002252	101.9	1,290	596	418	.0612	.0609	.772	.776
.002252	101.6	1,200	483	323	.0547	.0571	.828	.793
.002252	101.3	1,210	489	327	.0544	.0567	.819	.785
.002252	101.3	1,150	376	234	.0431	.0483	.861	.769
.002252	102.0	1,140	373	235	.0440	.0488	.875	.789
.002252	101.6	1,060	292	173	.0375	.0443	.937	.794
.002252	101.8	1,060	294	173	.0375	.0445	.939	.791
.002252	101.3	990	195	103	.0256	.0338	1.000	.758
.002252	100.9	930	157	73	.0206	.0309	1.060	.708
.002252	100.9	840	63	11	.0037	.0152	1.175	.293
.002252	100.6	810	37	−13	−.0048	.0096	1.215	-------
.002261	81.8	1,520	998	872	.0916	.0732	.526	.658
.002261	81.3	1,500	995	867	.0935	.0749	.530	.662
.002253	78.1	1,515	1,002	888	.0943	.0742	.504	.640
.002253	78.0	1,495	987	878	.0957	.0751	.510	.649
.002253	74.1	1,515	1,002	906	.0962	.0742	.478	.620
.002253	74.3	1,510	996	900	.0962	.0743	.481	.624
.002259	65.8	1,505	998	943	.1010	.0747	.428	.579
.002259	66.5	1,505	994	935	.1003	.0745	.432	.582
.002259	60.8	1,490	998	972	.1063	.0761	.399	.557
.002259	61.0	1,485	993	961	.1059	.0764	.402	.557
.002262	23.3	1,435	998	921	.1085	.0821	.159	.210
.002262	25.3	1,430	993	921	.1092	.0820	.173	.231

Propeller No. 3792. Diameter, 9 feet

SET AT 17° AT 0.75 R.

ρ	V m. p. h.	N r. p. m.	Q lb. ft.	T lb.	C_T	C_P	$\frac{V}{nD}$	η
0.002254	84.2	1,875	993	1,039	0.0720	0.0479	0.439	0.660
.002254	85.5	1,880	992	1,028	.0709	.0477	.445	.660
.002243	88.2	1,895	992	1,019	.0693	.0470	.455	.670
.002243	89.8	1,900	992	1,013	.0686	.0469	.462	.676
.002243	91.2	1,905	993	1,007	.0676	.0465	.468	.680
.002243	92.0	1,905	993	1,003	.0675	.0465	.472	.685
.002236	94.7	1,935	993	989	.0649	.0455	.479	.684
.002236	95.2	1,930	991	985	.0649	.0456	.482	.685
.002230	104.0	1,960	989	943	.0604	.0441	.518	.709
.002230	104.0	1,960	989	942	.0603	.0441	.518	.707
.002230	103.3	1,900	883	834	.0568	.0420	.531	.718
.002230	103.6	1,900	879	833	.0567	.0417	.534	.726
.002230	103.2	1,810	773	717	.0540	.0406	.558	.741
.002230	103.1	1,810	773	720	.0541	.0406	.556	.741
.002230	102.4	1,720	630	564	.0469	.0365	.581	.746
.002230	102.7	1,720	630	564	.0469	.0365	.583	.749
.002230	102.0	1,610	531	454	.0431	.0352	.619	.757
.002230	102.1	1,610	530	459	.0436	.0351	.620	.770
.002230	102.0	1,530	411	336	.0353	.0301	.651	.764
.002230	101.5	1,530	411	334	.0350	.0301	.648	.755
.002230	100.8	1,400	293	216	.0272	.0256	.704	.748
.002226	101.0	1,295	216	139	.0204	.0221	.761	.704
.002226	100.9	1,200	136	65	.0111	.0163	.821	.561
.002226	100.9	1,130	75	10	.0019	.0100	.872	.168
.002226	100.3	1,045	35	−32	−.0072	.0054	.939	-------
.002230	83.6	1,895	996	1,047	.0718	.0476	.431	.650
.002230	83.0	1,885	993	1,047	.0726	.0481	.430	.650
.002230	78.2	1,865	997	1,048	.0763	.0492	.410	.635
.002230	79.2	1,865	995	1,070	.0758	.0492	.415	.639
.002235	73.8	1,855	999	1,107	.0788	.0499	.389	.615
.002235	75.7	1,855	998	1,089	.0775	.0500	.399	.619
.002238	68.8	1,845	999	1,143	.0825	.0502	.364	.598
.002238	69.0	1,845	999	1,135	.0819	.0502	.366	.596
.002238	63.7	1,840	1,002	1,169	.0847	.0509	.339	.565
.002238	63.1	1,830	998	1,167	.0855	.0511	.337	.564
.002238	59.0	1,830	1,002	1,188	.0871	.0514	.315	.535
.002238	58.4	1,830	997	1,195	.0876	.0511	.312	.535
.002247	26.7	1,815	1,003	1,313	.0975	.0520	.144	.270
.002247	27.5	1,815	999	1,353	.1002	.0518	.148	.286
.002247	26.3	1,805	994	1,304	.0979	.0520	.142	.268

Propeller No. 3792. Diameter, 9 feet

SET AT 28° AT 0.75 R.

ρ	V m. p. h.	N r. p. m.	Q lb. ft.	T lb.	C_T	C_P	$\frac{V}{nD}$	η
0.002252	83.5	1,280	983	720	0.1072	0.1020	0.636	0.670
.002252	83.2	1,275	979	718	.1078	.1025	.638	.670
.002252	86.9	1,290	986	712	.1042	.1008	.659	.684
.002252	86.6	1,285	980	709	.1049	.1008	.659	.686
.002249	91.1	1,290	991	704	.1031	.1011	.692	.706
.002249	90.1	1,290	984	700	.1028	.1003	.683	.700
.002241	93.7	1,300	984	691	.1000	.0995	.705	.710
.002241	94.6	1,300	981	684	.0990	.0991	.712	.711
.002236	104.8	1,310	987	652	.0933	.0986	.781	.739
.002236	103.5	1,310	981	651	.0933	.0980	.772	.735
.002236	103.1	1,270	882	574	.0875	.0938	.795	.741
.002236	103.4	1,260	881	574	.0889	.0952	.804	.750
.002229	102.8	1,200	803	516	.0883	.0960	.839	.771
.002229	103.1	1,205	804	514	.0870	.0950	.839	.767
.002229	103.1	1,160	717	445	.0815	.0915	.870	.776
.002229	102.7	1,160	716	445	.0815	.0914	.865	.773
.002229	102.6	1,105	619	372	.0750	.0870	.908	.783
.002229	102.4	1,105	619	371	.0748	.0870	.909	.781
.002229	102.3	1,040	524	301	.0685	.0834	.964	.792
.002229	102.3	1,040	524	301	.0685	.0834	.964	.792
.002229	102.4	1,000	476	268	.0660	.0817	1.002	.810
.002229	102.5	1,000	475	270	.0664	.0815	1.003	.817
.002229	101.6	940	390	208	.0580	.0759	1.058	.810
.002229	101.7	940	388	207	.0577	.0754	1.058	.809
.002229	101.3	900	330	167	.0509	.0700	1.101	.800
.002229	101.5	900	330	169	.0514	.0700	1.104	.812
.002229	101.6	860	279	133	.0444	.0649	1.154	.791
.002229	101.5	810	204	91	.0342	.0534	1.226	.785
.002232	102.0	745	111	37	.0164	.0344	1.340	.638
.002232	101.9	700	53	7	.0035	.0186	1.424	.269
.002232	101.8	660	21	−15	−.0084	.0082	1.510	-------
.002231	80.0	1,300	987	731	.1062	.1002	.602	.638
.002231	80.6	1,295	983	722	.1050	.1005	.609	.642
.002233	74.8	1,300	987	720	.1049	.1001	.563	.589
.002233	75.0	1,290	978	711	.1050	.1005	.568	.592
.002236	66.6	1,270	981	703	.1070	.1041	.512	.526
.002236	66.9	1,270	978	703	.1070	.1037	.515	.532
.002239	59.8	1,255	980	687	.1070	.1064	.466	.469
.002239	59.8	1,250	977	687	.1080	.1070	.468	.473
.002239	54.7	1,225	977	677	.1108	.1116	.437	.434
.002239	54.9	1,220	978	674	.1102	.1125	.440	.432
.002239	51.8	1,215	979	670	.1117	.1131	.417	.411
.002239	50.6	1,210	975	662	.1110	.1141	.409	.398
.002245	20.9	1,160	970	626	.1136	.1228	.176	.163
.002245	21.2	1,155	970	622	.1140	.1235	.179	.167

TABLE I.—OBSERVED TEST DATA—Continued

Propeller No 3792. Diameter, 8 feet 6 inches

SET AT 12° AT 0.75 R.

ρ	V m. p. h.	N r. p. m.	Q lb. ft.	T lb.	C_T	C_P	$\frac{V}{nD}$	η
0.002342	101.3	2,080	428	420	0.0286	0.0215	0.504	0.670
.002342	101.6	2,080	426	420	.0286	.0214	.505	.675
.002342	101.8	1,970	344	315	.0239	.0194	.535	.660
.002334	101.7	1,875	289	235	.0198	.0179	.561	.618
.002334	101.8	1,775	231	161	.0151	.0160	.589	.556
.002334	101.2	1,660	169	87	.0093	.0134	.631	.440
.002338	100.9	1,575	115	19	.0023	.0101	.662	.148
.002338	100.8	1,455	57	−53	.0074	.0058	.716	
.002338	100.3	1,400	33	−77	−.0116	.0036	.743	
.002350	84.4	2,100	542	641	.0427	.0267	.416	.665
.002350	84.6	2,105	543	644	.0423	.0266	.416	.666
.002342	83.0	1,785	340	361	.0333	.0232	.481	.690
.002339	87.6	2,105	538	623	.0415	.0265	.431	.675
.002339	87.9	2,105	536	625	.0416	.0264	.432	.681
.002339	86.3	1,790	311	309	.0284	.0211	.499	.671
.002339	90.3	2,100	311	584	.0390	.0252	.445	.689
.002339	90.2	2,100	511	580	.0388	.0252	.445	.685
.002330	93.3	2,105	508	563	.0376	.0251	.459	.686
.002330	93.1	2,100	507	561	.0376	.0252	.459	.685
.002333	80.1	2,100	575	714	.0479	.0285	.395	.664
.002333	80.4	2,100	577	713	.0478	.0286	.396	.662
.002333	77.7	1,800	361	400	.0365	.0243	.447	.671
.002336	75.9	2,085	567	718	.0488	.0285	.376	.644
.002336	75.9	2,085	570	723	.0491	.0286	.376	.646
.002336	73.5	1,810	380	450	.0406	.0253	.420	.674
.002336	69.7	2,105	622	830	.0554	.0307	.343	.619
.002336	69.4	2,100	622	829	.0555	.0308	.342	.616
.002339	67.6	1,785	390	486	.0450	.0267	.392	.661
.002339	65.1	2,100	649	887	.0594	.0321	.321	.594
.002339	65.0	2,100	649	893	.0597	.0321	.320	.595
.002339	62.2	1,790	415	542	.0499	.0283	.360	.635
.002339	57.9	2,080	649	931	.0636	.0327	.288	.560
.002339	57.8	2,080	650	934	.0637	.0328	.288	.559
.002339	57.5	1,800	436	597	.0544	.0294	.330	.610
.002343	54.6	2,115	670	985	.0648	.0326	.267	.530
.002343	55.9	2,115	672	983	.0647	.0327	.274	.542
.002343	52.8	1,785	430	611	.0565	.0293	.306	.590
.002349	25.2	2,100	762	1,270	.0845	.0374	.124	.281
.002349	25.5	2,100	761	1,280	.0851	.0373	.126	.287
.002349	20.9	1,800	495	899	.0814	.0331	.120	.295

Propeller No. 3792. Diameter, 8 feet 6 inches

SET AT 17° AT 0.75 R.

ρ	V m. p. h.	N r. p. m.	Q lb. ft.	T lb.	C_T	C_P	$\frac{V}{nD}$	η
0.002340	84.8	2,030	1,005	1,097	0.0783	0.0528	0.432	0.641
.002340	84.5	2,030	1,004	1,090	.0778	.0528	.429	.632
.002340	88.4	2,030	1,004	1,074	.0768	.0530	.451	.653
.002340	88.4	2,040	1,004	1,072	.0759	.0525	.449	.649
.002328	91.6	2,065	1,004	1,058	.0731	.0516	.459	.650
.002328	92.8	2,060	1,003	1,053	.0736	.0518	.466	.661
.002328	94.4	2,070	1,000	1,042	.0721	.0510	.472	.667
.002328	94.6	2,070	998	1,037	.0718	.0510	.473	.666
.002325	103.5	2,180	992	998	.0623	.0458	.492	.669
.002325	13.6	2,180	992	999	.0624	.0458	.492	.670
.002325	102.3	2,000	848	841	.0624	.0464	.530	.713
.002325	102.5	2,000	848	841	.0624	.0464	.530	.713
.002317	102.2	1,880	700	668	.0564	.0436	.562	.727
.002317	102.0	1,880	700	668	.0564	.0436	.561	.726
.002317	101.9	1,810	609	565	.0514	.0409	.582	.731
.002317	101.6	1,810	608	565	.0514	.0409	.582	.731
.002317	101.2	1,705	512	464	.0476	.0387	.614	.753
.002317	101.1	1,705	512	463	.0475	.0387	.614	.754
.002317	101.1	1,610	408	350	.0402	.0346	.650	.755
.002317	100.9	1,610	408	350	.0402	.0346	.649	.754
.002317	101.1	1.495	309	248	.0330	.0305	.700	.760
.002317	100.5	1,400	231	163	.0248	.0259	.744	.712
.002317	100.4	1,310	178	109	.0189	.0229	.792	.654
.002317	99.6	1,180	88	25	.0051	.0139	.874	.324
.002317	100.1	1,105	43	−19	−.0046	.0077	.938	
.002317	100.2	1,145	13	−45	−.0101	.0218	.905	
.002326	80.9	2,030	1,009	1,118	.0803	.0536	.412	.617
.002326	80.4	2,020	1,006	1,115	.0810	.0540	.412	.617
.002326	77.0	2,000	1,012	1,143	.0851	.0555	.398	.608
.002326	74.2	2,000	1,012	1,156	.0860	.0554	.384	.598
.002329	71.6	2,000	1,015	1,178	.0876	.0556	.371	.581
.002329	70.8	1,995	1,014	1,175	.0878	.0557	.366	.573
.002329	64.8	2,000	1,019	1,213	.0902	.0558	.336	.541
.002329	65.0	1,990	1,014	1,217	.0910	.0562	.338	.548
.002332	61.4	1,995	1,018	1,239	.0922	.0559	.319	.524
.002332	60.7	1,995	1,016	1,244	.0924	.0558	.315	.522
.002332	55.0	1,955	1,019	1,272	.0984	.0584	.291	.490
.002332	56.2	1,970	1,018	1,267	.0966	.0573	.297	.501
.002339	26.8	1,930	1,022	1,371	.1089	.0599	.144	.261
.002339	27.9	1,930	1,020	1,376	.1093	.0598	.149	.272

Propeller No. 3792. Diameter, 8 feet 6 inches

SET AT 23° AT 0.75 R.

ρ	V m. p. h.	N r. p. m.	Q lb. ft.	T lb.	C_T	C_P	$\frac{V}{nD}$	η
0.002330	84.6	1,640	1,032	926	0.1018	0.0840	0.534	0.643
.002330	83.8	1,640	1,030	928	.1021	.0838	.529	.646
.002327	87.4	1,655	1,032	914	.0988	.0826	.547	.653
.002327	88.1	1,655	1,030	910	.0985	.0824	.551	.659
.002324	91.9	1,660	1,031	897	.0965	.0819	.573	.676
.002324	91.9	1,660	1,029	891	.0960	.0816	.572	.673
.002316	94.2	1,660	1,032	889	.0962	.0824	.587	.685
.002316	94.0	1,660	1,029	884	.0956	.0822	.586	.682
.002313	103.0	1,685	1,028	852	.0897	.0797	.633	.713
.002313	102.9	1,700	1,030	853	.0880	.0784	.627	.704
.002313	102.3	1,610	921	751	.0865	.0782	.658	.729
.002313	102.0	1,610	923	754	.0868	.0785	.656	.726
.002313	101.6	1,525	769	610	.0782	.0727	.690	.742
.002313	101.8	1,525	769	608	.0779	.0727	.692	.741
.002304	101.5							
.002304	101.1	1,430	634	521	.0761	.0684	.733	.817
.002304	101.6	1,355	544	393	.0640	.0655	.776	.758
.002304	102.1	1,355	544	393	.0640	.0655	.780	.762
.002304	102.3	1,250	436	302	.0578	.0618	.847	.792
.002304	102.0	1,250	436	301	.0576	.0618	.844	.788
.002304	101.6	1,170	328	210	.0459	.0530	.898	.777
.002304	101.5	1,170	326	206	.0450	.0526	.898	.768
.002304	100.9	1,100	276	167	.0413	.0504	.950	.779
.002304	100.5	1,020	182	106	.0305	.0387	1.020	.804
.002304	100.2	950	116	48	.0159	.0384	1.093	.611
.002304	100.6	870	59	4	.0015	.0172	1.197	.109
.002304	100.5	820	3	−30	−.0133	.0098	1.269	
.002313	81.0	1,640	1,032	945	.1047	.0848	.511	.632
.002313	81.2	1,640	1,028	944	.1046	.0841	.512	.637
.002313	77.1	1,630	1,032	964	.1081	.0859	.490	.618
.002313	77.9	1,625	1,028	954	.1075	.0859	.496	.622
.002316	72.8	1,630	1,030	982	.1100	.0855	.463	.596
.002316	71.0	1,630	1,030	988	.1107	.0855	.451	.585
.002316	66.1	1,630	1,036	1,023	.1146	.0858	.420	.561
.002316	66.0	1,620	1,030	1,014	.1151	.0865	.422	.562
.002319	56.0	1,620	1,038	1,070	.1213	.0869	.358	.501
.002319	58.0	1,610	1,033	1,057	.1214	.0878	.372	.514
.002329	24.5	1,590	1,036	1,075	.1264	.0897	.159	.225
.002329	25.3	1,590	1,030	1,071	.1261	.0892	.165	.233

Propeller No. 3792. Diameter, 8 feet 6 inches

SET AT 28° AT 0.75 R.

ρ	V m. p. h.	N r. p. m.	Q lb. ft.	T lb.	C_T	C_P	$\frac{V}{nD}$	η
0.002344	84.6	1,410	1,027	793	0.1175	0.1121	0.621	0.650
.002344	83.2	1,405	1,024	791	.1180	.1129	.613	.641
.002344	86.7	1,410	1,027	784	.1159	.1121	.636	.658
.002344	86.5	1,410	1,026	779	.1154	.1121	.634	.652
.002332	90.6	1,415	1,034	773	.1142	.1130	.662	.671
.002332	91.4	1,415	1,030	767	.1127	.1128	.668	.670
.002332	94.0	1,420	1,034	760	.1115	.1123	.685	.670
.002332	94.0	1,415	1,028	754	.1115	.1121	.687	.682
.002325	103.9	1,440	1,029	725	.1036	.1083	.745	.712
.002325	103.6	1,435	1,024	720	.1038	.1089	.748	.714
.002325	103.4	1,400	985	686	.1039	.1098	.765	.723
.002325	103.4	1,400	985	688	.1043	.1098	.765	.727
.002318	103.2	1,350	885	608	.0995	.1071	.792	.736
.002318	103.2	1,350	885	604	.0988	.1071	.792	.730
.002318	103.1	1,300	833	561	.0988	.1082	.821	.749
.002318	103.1	1,305	836	560	.0980	.1080	.819	.744
.002318	102.5	1,250	723	470	.0896	.1018	.849	.749
.002318	102.9	1,240	722	470	.0910	.1033	.856	.756
.002318	102.5	1,190	643	408	.0859	.1000	.892	.766
.002318	102.6	1,200	647	413	.0857	.0990	.884	.764
.002318	102.4	1,150	575	355	.0799	.0957	.921	.769
.002318	102.4	1,150	575	357	.0804	.0957	.921	.773
.002318	102.1	1,100	481	288	.0709	.0875	.960	.782
.002318	102.0	1,100	482	289	.0709	.0876	.959	.775
.002313	101.7	1,055	459	266	.0713	.0908	.998	.784
.002313	101.6	1,065	468	276	.0725	.0909	.985	.786
.002313	101.7	1,005	404	227	.0670	.0880	1.044	.796
.002313	101.6	1,015	406	237	.0686	.0869	1.034	.819
.002313	101.8	955	318	161	.0527	.0767	1.102	.757
.002313	102.2	955	318	168	.0549	.0767	1.110	.792
.002313	101.9	900	241	122	.0449	.0655	1.170	.801
.002313	101.7	850	184	85	.0351	.0561	1.238	.772
.002313	101.6	800	160	66	.0308	.0551	1.316	.735
.002313	101.5	750	81	22	.0116	.0318	1.400	.518
.002313	101.0	700	23	−9	−.0055	.1035	1.495	
.002322	79.0	1,410	1,025	817	.1205	.1130	.581	.620
.002322	79.1	1,410	1,024	810	.1211	.1130	.581	.624
.002322	75.2	1,415	1,029	829	.1231	.1126	.550	.602
.002322	77.9	1,410	1,024	818	.1222	.1130	.571	.617
.002325	70.3	1,415	1,035	830	.1230	.1130	.514	.559
.002325	70.4	1,410	1,028	824	.1229	.1140	.516	.566
.002328	64.6	1,410	1,032	810	.1208	.1136	.475	.504
.002328	64.6	1,400	1,026	803	.1216	.1148	.477	.506
.002328	58.4	1,385	1,032	787	.1216	.1177	.436	.451
.002328	59.3	1,385	1,029	787	.1216	.1176	.443	.458
.002331	56.2	1,370	1,032	780	.1230	.1210	.424	.431
.002331	55.8	1,360	1,028	775	.1240	.1211	.424	.406
.002337	23.1	1,270	1,019	698	.1279	.1380	.188	.174
.002337	22.0	1,270	1,016	696	.1276	.1384	.179	.166

TABLE I.—OBSERVED TEST DATA—Continued

Propeller No. 3792. Diameter, 8 feet

SET AT 12° AT 0.75 R.

ρ	V m. p. h.	N r. p. m.	Q lb. ft.	T lb.	C_T	C_P	$\frac{V}{nD}$	η
0.002317	103.3	2,285	440	466	0.0339	0.0252	0.498	0.670
.002317	103.0	2,210	390	401	.0312	.0238	.514	.673
.002308	102.5	2,090	326	300	.0261	.0223	.540	.631
.002308	101.8	2,000	272	233	.0222	.0203	.560	.611
.002308	101.4	1,910	229	173	.0180	.0187	.585	.563
.002308	101.7	1,800	173	103	.0121	.0159	.620	.470
.002308	100.9	1,600	95	0	0	.0111	.689	---------
.002308	101.4	1,600	95	0	0	.0111	.696	---------
.002308	101.0	1,515	59	−48	−.0079	.0077	.734	---------
.002308	101.0	1,405	19	−96	−.0185	.0028	.790	---------
.002316	84.3	2,180	448	550	.0438	.0281	.425	.663
.002316	82.6	2,165	450	554	.0448	.0287	.420	.656
.002316	82.1	1,880	290	325	.0349	.0244	.480	.687
.002316	86.4	2,215	467	564	.0435	.0283	.427	.657
.002316	86.6	2,215	468	566	.0437	.0285	.431	.661
.002305	90.1	2,200	441	511	.0402	.0273	.451	.664
.002305	90.5	2,200	444	517	.0407	.0274	.452	.671
.002305	93.2	2,200	443	500	.0393	.0274	.466	.668
.002305	93.4	2,220	447	505	.0390	.0271	.462	.664
.002305	77.7	2,170	474	606	.0490	.0301	.394	.642
.002305	76.6	2,180	474	615	.0492	.0299	.387	.638
.002305	75.4	1,900	330	390	.0411	.0272	.436	.659
.002305	72.6	2,200	510	684	.0538	.0316	.363	.619
.002305	73.4	2,200	512	683	.0538	.0316	.367	.624
.002305	72.6	1,920	346	424	.0438	.0281	.416	.649
.002307	70.0	2,205	533	724	.0567	.0327	.349	.604
.002307	69.1	2,205	533	735	.0575	.0327	.345	.607
.002307	68.6	1,900	347	440	.0464	.0287	.398	.644
.002307	63.7	2,190	540	770	.0612	.0337	.320	.582
.002307	63.1	2,200	542	783	.0614	.0334	.316	.581
.002307	61.9	1,895	365	495	.0524	.0303	.359	.621
.002307	60.2	2,200	548	798	.0627	.0339	.301	.558
.002307	58.5	2,200	548	809	.0636	.0339	.292	.548
.002310	57.0	1,885	374	534	.0571	.0315	.333	.603
.002310	50.9	2,200	584	907	.0713	.0360	.254	.503
.002310	51.4	2,225	585	907	.0696	.0352	.254	.503
.002310	48.1	1,900	402	609	.0641	.0332	.279	.539
.002316	24.0	2,200	614	1,121	.0880	.0377	.120	.281
.002316	24.4	2,205	614	1,111	.0868	.0376	.121	.280
.002316	20.4	1,900	429	798	.0839	.0354	.118	.279

Propeller No. 3792. Diameter, 8 feet

SET AT 17° AT 0.75 R.

ρ	V m. p. h.	N r. p. m.	Q lb. ft.	T lb.	C_T	C_P	$\frac{V}{nD}$	η
0.002338	86.6	2,225	963	1,093	0.0830	0.0574	0.427	0.617
.002338	85.3	2,220	964	1,095	.0836	.0578	.423	.612
.002338	88.8	2,220	962	1,077	.0822	.0576	.440	.628
.002338	89.6	2,220	963	1,073	.0819	.0576	.444	.631
.002325	91.9	2,230	961	1,062	.0806	.0572	.454	.640
.002325	92.9	2,230	962	1,057	.0804	.0572	.458	.644
.002325	95.8	2,245	959	1,040	.0779	.0563	.469	.645
.002325	96.4	2,245	956	1,039	.0778	.0563	.471	.649
.002319	104.8	2,300	951	994	.0712	.0536	.501	.666
.002319	105.0	2,280	948	996	.0727	.0544	.506	.680
.002312	104.1	2,110	736	896	.0704	.0535	.521	.686
.002312	103.0	2,110	736	749	.0639	.0494	.536	693
.002312	103.0	2,010	638	748	.0638	.0494	.536	.697
.002312	102.5	2,010	638	628	.0591	.0470	.561	.707
.002315	102.6	1,860	500	628	.0591	.0474	.561	.707
.002315	102.1	1,870	500	467	.0512	.0431	.605	.718
.002315	102.3	1,765	421	470	.0511	.0424	.603	.726
.002315	102.1	1,765	421	386	.0470	.0403	.634	.739
.002315	101.8	1,680	350	382	.0466	.0403	.635	.734
.002305	102.6	1,680	350	302	.0407	.0371	.671	.736
.002305	102.6	1,590	286	302	.0407	.0371	.671	.736
.002305	102.2	1,505	239	232	.0350	.0338	.708	.733
.002305	101.9	1,400	173	176	.0296	.0315	.745	.700
.002305	101.5	1,275	92	113	.0220	.0264	.798	.665
.002305	101.2	1,210	66	28	.0066	.0169	.875	.341
.002305	101.9	1,110	15	4	.0010	.0134	.925	.071
.002305	100.6	2,200	970	−45	−.0014	.0036	.996	---------
.002316	80.2	2,200	967	1,127	.0883	.0600	.401	.590
.002316	80.9	2,190	974	1,127	.0886	.0595	.401	.595
.002319	74.4	2,190	969	1,157	.0916	.0605	.374	.566
.002319	74.2	2,180	970	1,162	.0918	.0602	.372	.566
.002319	72.7	2,180	970	1,177	.0938	.0608	.367	.564
.002319	71.4	2,170	977	1,182	.0942	.0608	.360	.558
.002319	66.4	2,170	977	1,217	.0979	.0619	.336	.532
.002319	66.8	2,170	981	1,213	.0977	.0619	.339	.535
.002322	61.2	2,170	979	1,245	.0100	.0619	.310	.501
.002322	61.8	2,150	980	1,236	.0994	.0617	.313	.504
.002322	57.4	2,150	980	1,260	.0103	.0630	.294	.481
.002322	57.6	2,115	988	1,265	.0103	.0630	.295	.484

Propeller No. 3792. Diameter, 8 feet

SET AT 23° AT 0.75 R.

ρ	V m. p. h.	N r. p. m.	Q lb. ft.	T lb.	C_T	C_P	$\frac{V}{nD}$	η
0.002310	85.8	1,800	1,012	949	0.1112	0.0933	0.525	0.626
.002310	84.7	1,805	1,010	948	.1106	.0926	.516	.617
.002310	87.8	1,820	1,009	940	.1078	.0908	.531	.631
.002310	87.5	1,820	1,009	936	.1075	.0908	.529	.627
.002297	91.6	1,830	1,010	924	.1055	.0907	.551	.642
.002297	91.0	1,830	1,010	924	.1055	.0907	.547	.637
.002297	93.5	1,835	1,012	919	.1043	.0903	.561	.656
.002297	93.8	1,840	1,012	915	.1034	.0899	.562	.647
.002294	103.7	1,855	1,007	874	.0972	.0882	.614	.677
.002294	103.6	1,855	1,005	874	.0972	.0880	.614	.678
.002287	103.3	1,790	908	776	.0928	.0853	.636	.692
.002287	103.6	1,790	905	777	.0929	.0854	.637	.693
.002287	103.0	1,710	794	667	.0873	.0816	.663	.708
.002287	103.3	1,715	797	667	.0869	.0817	.663	.704
.002287	102.9	1,635	708	580	.0832	.0797	.692	.723
.002287	102.6	1 640	709	582	.0830	.0792	.688	.722
.002287	102.2	1,570	619	494	.0768	.0756	.717	.728
.002287	102.5	1,570	620	491	.0763	.0760	.719	.721
.002287	102.9	1,470	518	395	.0701	.0723	.770	.747
.002287	102.7	1,470	518	397	.0704	.0723	.767	.746
.002279	102.7	1,400	430	317	.0623	.0664	.807	.757
.002279	102.4	1,400	430	315	.0619	.0664	.805	.750
.002279	102.2	1,310	357	247	.0555	.0629	.860	.760
.002279	102.4	1,315	358	251	.0559	.0629	.857	.762
.002279	102.2	1,240	303	204	.0511	.0598	.908	.775
.002279	102.4	1,240	303	205	.0514	.0598	.910	.781
.002279	102.1	1,150	221	136	.0396	.0505	.977	.766
.002279	101.3	1,060	156	86	.0294	.0420	1.051	.736
.002279	101.3	1,000	115	46	.0177	.0348	1.113	.567
.002279	101.2	920	56	6	.0027	.0200	1.211	.165
.002279	101.2	880	27	−11	−.0055	.0106	1.266	---------
.002288	80.4	1,820	1,016	972	.1125	.0928	.486	.590
.002288	78.3	1,820	1,013	981	.1136	.0925	.473	.581
.002288	75.4	1,815	1,012	999	.1160	.0930	.457	.570
.002288	75.0	1,815	1,012	997	.1160	.0930	.455	.568
.002291	70.1	1,800	1,014	1,024	.1211	.0948	.429	.548
.002291	69.8	1,800	1,014	1,028	.1215	.0948	.427	.548
.002291	63.5	1,800	1,018	1,059	.1250	.0950	.388	.511
.002291	63.1	1,800	1,015	1,057	.1250	.0948	.386	.509
.002294	59.5	1,795	1,018	1,079	.1282	.0952	.365	.492
.002294	59.6	1,795	1,014	1,076	.1280	.0949	.365	.493
.002294	54.5	1,795	1,018	1,105	.1314	.0952	.334	.462
.002294	54.9	1,795	1,015	1,100	.1308	.0949	.336	.464
.002300	25.6	1,780	1,016	1,199	.1443	.0964	.158	.238
.002300	24.8	1,780	1,012	1,186	.1428	.0959	.153	.228

Propeller No. 3792. Diameter, 8 feet

SET AT 28° AT 0.75 R.

ρ	V m. p. h.	N r. p. m.	Q lb. ft.	T lb.	C_T	C_P	$\frac{V}{nD}$	η
0.002296	84.6	1,565	1,011	826	0.1295	0.1243	0.595	0.619
.002296	83.5	1,565	1,008	823	.1288	.1237	.588	.612
.002296	87.6	1,570	1,012	814	.1262	.1235	.615	.628
.002296	87.4	1,575	1,008	812	.1256	.1222	.610	.626
.002296	90.5	1,580	1,011	804	.1234	.1218	.630	.639
.002296	90.5	1,580	1,011	801	.1230	.1218	.630	.640
.002286	93.4	1,590	1,015	793	.1210	.1212	.646	.645
.002286	94.2	1,590	1,012	788	.1201	.1210	.650	.647
.002283	103.8	1,600	1,015	759	.1143	.1200	.712	.680
.002283	102.9	1,600	1,011	760	.1146	.1192	.707	.680
.002283	102.9	1,550	955	707	.1134	.1204	.729	.690
.002283	103.7	1,555	955	709	.1132	.1197	.732	.697
.002283	102.9	1,505	885	645	.1100	.1186	.752	.702
.002283	103.4	1,505	885	646	.1100	.1180	.755	.704
.002283	102.9	1,450	797	568	.1040	.1148	.780	.711
.002283	102.3	1,450	799	569	.1043	.1148	.776	.708
.002283	102.3	1,400	732	512	.1007	.1128	.804	.715
.002267	102.4	1,400	732	511	.1007	.1136	.805	.730
.002267	102.3	1,355	674	466	.0984	.1115	.832	.735
.002267	102.2	1,355	674	464	.0980	.1115	.830	.730
.002267	102.8	1,300	612	412	.0945	.1100	.869	.747
.002267	103.2	1,300	612	413	.0947	.1100	.873	.751
.002267	102.5	1,240	519	335	.0845	.1025	.908	.748
.002267	102.7	1,240	519	336	.0848	.1025	.910	.754
.002267	102.5	1,170	444	277	.0784	.0988	.964	.764
.002267	102.4	1,170	444	277	.0784	.0988	.102	.764
.002267	102.8	1,100	367	217	.0694	.0925	.102	.773
.002267	102.4	1,100	367	218	.0697	.0925	.932	.773
.002267	101.7	1,025	285	159	.0587	.0826	1.09	.775
.002267	101.5	1,025	285	157	.0579	.0826	1.09	.764
.002267	101.9	955	219	113	.0480	.0732	1.173	.769
.002267	101.5	880	155	77	.0386	.0609	1.270	.804
.002267	101.5	810	86	27	.1589	.0398	1.380	.550
.002267	101.2	770	58	12	.0785	.0298	1.447	.387
.002267	101.4	750	36	−3	.0207	.0194	1.484	---------
.002267	101.4	710	2	−20	.0154	.0121	1.572	---------
.002284	79.6	1,570	1,015	825	.1320	.1248	.558	.593
.002284	79.7	1,575	1,012	839	.1300	.1236	.556	.590
.002284	73.2	1,575	1,014	869	.3480	.1240	.511	.562
.002284	74.8	1,570	1,009	858	.3400	.1242	.525	.567
.002287	70.0	1,570	1,014	887	.0138	.0124	.490	.544
.002287	70.9	1,570	1,014	875	.0136	.0124	.497	.544
.002290	64.0	1,570	1,014	886	.0138	.0124	.448	.499
.002290	64.6	1,570	1,012	884	.0137	.0124	.453	.501
.002290	59.0	1,550	1,017	863	.0138	.0127	.419	.454
.002290	58.5	1,550	1,013	856	.0136	.0127	.415	.447
.002293	51.7	1,530	1,012	832	.0136	.0130	.372	.389
.002293	52.5	1,535	1,013	831	.0135	.0129	.376	.394
.002296	22.0	1,430	989	749	.0140	.0146	.169	.162
.002296	22.0	1,425	986	747	.0141	.0146	.170	.164

TABLE II.—FINAL ADJUSTED COEFFICIENTS

Propeller No. 3792. Diameter, 10 feet

12° AT 0.75 R.

$\frac{V}{nD}$	C_T	C_P	η	C_S
0.10	0.0639	0.0269	0.238	0.206
.15	.0622	.0263	.349	.310
.20	.0581	.0260	.447	.415
.25	.0540	.0251	.538	.522
.30	.0490	.0241	.610	.632
.35	.0431	.0228	.662	.746
.40	.0368	.0208	.709	.868
.45	.0294	.0181	.730	1.003
.50	.0219	.0150	.730	1.155
.55	.0145	.0119	.670	1.333
.60	.0066	.0086	.460	1.553

Propeller No. 3792. Diameter, 10 feet

17° AT 0.75 R.

$\frac{V}{nD}$	C_T	C_P	η	C_S
0.10	0.0868	0.0411	0.211	0.189
.15	.0840	.0411	.306	.284
.20	.0810	.0411	.394	.379
.25	.0771	.0410	.470	.473
.30	.0731	.0405	.541	.569
.35	.0687	.0400	.601	.665
.40	.0635	.0390	.651	.766
.45	.0578	.0374	.695	.868
.50	.0512	.0350	.731	.977
.55	.0443	.0320	.761	1.092
.60	.0372	.0286	.782	1.220
.65	.0304	.0250	.790	1.356
.70	.0232	.0211	.770	1.515
.75	.0162	.0171	.711	1.691
.80	.0095	.0129	.588	1.908
.85	.0027	.0082	.280	2.220

Propeller No. 3792. Diameter, 10 feet

23° AT 0.75 R.

$\frac{V}{nD}$	C_T	C_P	η	C_S
0.10	0.0801	0.0670	0.120	0.172
.15	.0802	.0649	.186	.259
.20	.0803	.0630	.255	.348
.25	.0803	.0616	.326	.437
.30	.0802	.0602	.400	.527
.35	.0802	.0594	.472	.616
.40	.0800	.0590	.541	.705
.45	.0790	.0588	.605	.793
.50	.0770	.0584	.660	.883
.55	.0737	.0579	.700	.973
.60	.0690	.0563	.735	1.067
.65	.0640	.0546	.761	1.162
.70	.0581	.0520	.782	1.265
.75	.0519	.0485	.801	1.372
.80	.0451	.0445	.812	1.490
.85	.0386	.0401	.819	1.615
.90	.0321	.0355	.812	1.754
.95	.0258	.0310	.790	1.903
1.00	.0191	.0258	.740	2.080
1.05	.0126	.0202	.656	2.290
1.10	.0061	.0134	.500	2.610

Propeller No. 3792. Diameter, 10 feet

28° AT 0.75 R.

$\frac{V}{nD}$	C_T	C_P	η	C_S
0.10	0.0864	0.0946	0.091	0.1602
.15	.0852	.0919	.139	.242
.20	.0846	.0895	.189	.324
.25	.0838	.0878	.238	.407
.30	.0830	.0863	.289	.490
.35	.0828	.0856	.339	.573
.40	.0822	.0847	.388	.656
.45	.0819	.0835	.440	.740
.50	.0810	.0818	.495	.825
.55	.0799	.0799	.550	.910
.60	.0786	.0780	.605	1.000
.65	.0776	.0766	.659	1.085
.70	.0759	.0752	.705	1.173
.75	.0735	.0742	.742	1.263
.80	.0700	.0728	.769	1.350
.85	.0660	.0710	.790	1.443
.90	.0610	.0682	.805	1.537
.95	.0561	.0651	.818	1.640
1.00	.0508	.0612	.829	1.750
1.05	.0451	.0567	.834	1.865
1.10	.0396	.0522	.835	1.986
1.15	.0340	.0475	.824	2.120
1.20	.0278	.0421	.791	2.260
1.25	.0216	.0364	.740	2.420
1.30	.0151	.0298	.660	2.630
1.35	.0091	.0228	.540	2.880

Propeller No. 3792. Diameter, 9 feet 6 inches

12° AT 0.75 R.

$\frac{V}{nD}$	C_T	C_P	η	C_S
0.10	0.0739	0.0308	0.240	0.200
.15	.0701	.0303	.337	.302
.20	.0658	.0298	.441	.404
.25	.0607	.0290	.524	.507
.30	.0550	.0277	.596	.615
.35	.0484	.0260	.651	.726
.40	.0411	.0238	.691	.845
.45	.0332	.0210	.711	.974
.50	.0254	.0179	.710	1.118
.55	.0178	.0146	.670	1.282
.60	.0098	.0111	.530	1.477
.65	.0019	.0076	.163	1.723

Propeller No. 3792. Diameter, 9 feet 6 inches

17° AT 0.75 R.

$\frac{V}{nD}$	C_T	C_P	η	C_S
0.10	0.0938	0.0466	0.201	0.1845
.15	.0914	.0466	.294	.277
.20	.0883	.0463	.382	.369
.25	.0850	.0461	.461	.463
.30	.0810	.0458	.530	.557
.35	.0763	.0452	.591	.650
.40	.0714	.0445	.641	.745
.45	.0659	.0434	.682	.843
.50	.0589	.0406	.720	.950
.55	.0500	.0368	.748	1.063
.60	.0415	.0324	.766	1.190
.65	.0332	.0280	.770	1.330
.70	.0254	.0235	.755	1.480
.75	.0180	.0191	.705	1.653
.80	.0109	.0148	.589	1.858
.85	.0040	.0100	.340	2.130

TABLE II.—FINAL ADJUSTED COEFFICIENTS—Continued

Propeller No. 3792. Diameter, 9 feet 6 inches

23° AT 0.75 R.

$\frac{V}{nD}$	C_T	C_P	η	C_S
0.10	0.0956	0.0780	0.123	0.167
.15	.0955	.0758	.189	.251
.20	.0953	.0738	.258	.337
.25	.0951	.0720	.330	.423
.30	.0949	.0704	.405	.510
.35	.0943	.0691	.477	.597
.40	.0934	.0681	.548	.685
.45	.0916	.0679	.607	.771
.50	.0882	.0672	.655	.857
.55	.0837	.0666	.691	.945
.60	.0781	.0650	.721	1.035
.65	.0721	.0627	.746	1.130
.70	.0659	.0599	.769	1.230
.75	.0593	.0564	.789	1.333
.80	.0521	.0521	.800	1.447
.85	.0456	.0480	.808	1.557
.90	.0383	.0429	.803	1.686
.95	.0316	.0379	.792	1.826
1.00	.0248	.0323	.767	1.983
1.05	.0178	.0262	.713	2.170
1.10	.0110	.0198	.613	2.410
1.15	.0041	.0121	.390	2.780

Propeller No. 3792. Diameter, 9 feet 6 inches

28° AT 0.75 R.

$\frac{V}{nD}$	C_T	C_P	η	C_S
0.10	0.1040	0.1130	0.092	0.1544
.15	.1020	.1105	.138	.2330
.20	.1000	.1081	.185	.312
.25	.0980	.1050	.233	.392
.30	.0970	.1025	.284	.474
.35	.0956	.1002	.334	.554
.40	.0950	.0980	.388	.637
.45	.0950	.0969	.441	.718
.50	.0950	.0952	.499	.802
.55	.0944	.0939	.553	.883
.60	.0940	.0927	.608	.965
.65	.0925	.0915	.656	1.050
.70	.0900	.0897	.702	1.133
.75	.0866	.0881	.737	1.220
.80	.0819	.0863	.761	1.307
.85	.0771	.0839	.781	1.395
.90	.0715	.0805	.800	1.490
.95	.0653	.0765	.810	1.590
1.00	.0585	.0714	.820	1.695
1.05	.0520	.0665	.822	1.804
1.10	.0455	.0613	.818	1.920
1.15	.0392	.0558	.807	2.050
1.20	.0326	.0497	.788	2.190
1.25	.0260	.0430	.756	2.340
1.30	.0195	.0361	.702	2.520
1.35	.0131	.0289	.613	2.740
1.40	.0066	.0212	.435	3.020

Propeller No. 3792. Diameter, 9 feet

12° AT 0.75 R.

$\frac{V}{nD}$	C_T	C_P	η	C_S
0.10	0.0827	0.0339	0.244	0.197
.15	.0767	.0331	.348	.296
.20	.0707	.0321	.440	.397
.25	.0642	.0310	.517	.501
.30	.0582	.0299	.583	.605
.35	.0510	.0279	.640	.717
.40	.0439	.0258	.679	.829
.45	.0361	.0232	.700	.955
.50	.0279	.0199	.702	1.095
.55	.0199	.0168	.650	1.245
.60	.0115	.0131	.526	1.430
.65	.0034	.0094	.235	1.655

Propeller No. 3792. Diameter, 9 feet

17° AT 0.75 R.

$\frac{V}{nD}$	C_T	C_P	η	C_S
0.10	0.1002	0.0519	0.193	0.181
.15	.0985	.0519	.285	.271
.20	.0961	.0518	.371	.361
.25	.0929	.0517	.446	.452
.30	.0886	.0512	.516	.543
.35	.0837	.0508	.577	.635
.40	.0775	.0493	.627	.730
.45	.0700	.0475	.663	.827
.50	.0622	.0444	.701	.931
.55	.0545	.0409	.733	1.042
.60	.0459	.0366	.753	1.163
.65	.0372	.0319	.758	1.296
.70	.0289	.0271	.747	1.440
.75	.0212	.0223	.713	1.606
.80	.0138	.0174	.635	1.800
.85	.0065	.0127	.435	2.040

Propeller No. 3792. Diameter, 9 feet

23° AT 0.75 R.

$\frac{V}{nD}$	C_T	C_P	η	C_S
0.10	0.1095	0.0876	0.125	0.163
.15	.1095	.0830	.198	.247
.20	.1091	.0794	.275	.332
.25	.1089	.0776	.351	.417
.30	.1083	.0767	.425	.501
.35	.1068	.0760	.493	.586
.40	.1041	.0756	.550	.671
.45	.1002	.0755	.597	.754
.50	.0959	.0752	.637	.838
.55	.0903	.0736	.674	.928
.60	.0845	.0718	.706	1.015
.65	.0775	.0690	.730	1.110
.70	.0704	.0656	.752	1.207
.75	.0635	.0618	.770	1.310
.80	.0565	.0577	.783	1.416
.85	.0492	.0530	.791	1.533
.90	.0421	.0480	.790	1.653
.95	.0352	.0426	.780	1.786
1.00	.0279	.0368	.757	1.933
1.05	.0208	.0304	.719	2.110
1.10	.0139	.0241	.633	2.310
1.15	.0070	.0179	.450	2.570

Propeller No. 3792. Diameter, 9 feet

28° AT 0.75 R.

$\frac{V}{nD}$	C_T	C_P	η	C_S
0.10	0.1140	0.1246	0.0915	0.148
.15	.1140	.1239	.138	.228
.20	.1140	.1227	.186	.304
.25	.1135	.1220	.232	.381
.30	.1130	.1202	.282	.458
.35	.1127	.1177	.335	.537
.40	.1120	.1145	.391	.617
.45	.1095	.1099	.449	.700
.50	.1072	.1051	.510	.784
.55	.1063	.1026	.569	.868
.60	.1064	.1013	.630	.949
.65	.1055	.1010	.678	1.030
.70	.1015	.1000	.710	1.110
.75	.0963	.0990	.730	1.193
.80	.0903	.0966	.748	1.277
.85	.0840	.0934	.765	1.367
.90	.0779	.0900	.781	1.457
.95	.0717	.0857	.795	1.555
1.00	.0652	.0812	.804	1.653
1.05	.0585	.0758	.810	1.760
1.10	.0519	.0708	.806	1.867
1.15	.0451	.0652	.796	1.986
1.20	.0377	.0578	.782	2.120
1.25	.0302	.0492	.754	2.280
1.30	.0225	.0403	.705	2.470
1.35	.0150	.0330	.614	2.660
1.40	.0076	.0245	.430	2.940

TABLE II.—FINAL ADJUSTED COEFFICIENTS—Continued

Propeller No. 3792. Diameter, 8 feet 6 inches

12° AT 0.75 R.

$\frac{V}{nD}$	C_T	C_P	η	C_S
0.10	0.0885	0.0379	0.234	0.192
.15	.0286	.0370	.335	.290
.20	.0759	.0357	.425	.389
.25	.0688	.0342	.503	.491
.30	.0619	.0325	.571	.595
.35	.0545	.0306	.622	.703
.40	.0464	.0280	.661	.816
.45	.0384	.0252	.686	.940
.50	.0303	.0222	.683	1.072
.55	.0217	.0188	.635	1.219
.60	.0131	.0150	.524	1.390
.65	.0046	.0112	.268	1.598

Propeller No. 3792. Diameter, 8 feet 6 inches

17° AT 0.75 R.

$\frac{V}{nD}$	C_T	C_P	η	C_S
0.10	0.1117	0.0610	0.183	0.175
.15	.1087	.0598	.272	.264
.20	.1046	.0589	.355	.352
.25	.1006	.0577	.435	.442
.30	.0958	.0572	.502	.532
.35	.0901	.0565	.559	.622
.40	.0838	.0549	.610	.716
.45	.0758	.0525	.650	.813
.50	.0672	.0489	.687	.913
.55	.0581	.0445	.719	1.025
.60	.0495	.0399	.744	1.143
.65	.0410	.0350	.761	1.271
.70	.0330	.0305	.757	1.406
.75	.0245	.0254	.724	1.564
.80	.0170	.0210	.648	1.733
.85	.0092	.0161	.485	1.942
.90	.0016	.0113	.128	2.210

Propeller No. 3792. Diameter, 8 feet 6 inches

23° AT 0.75 R.

$\frac{V}{nD}$	C_T	C_T	η	C_S
0.10	0.1267	0.0899	0.141	0.162
.15	.1260	.0896	.211	.243
.20	.1261	.0891	.283	.324
.25	.1261	.0887	.355	.406
.30	.1249	.0881	.425	.487
.35	.1228	.0875	.490	.570
.40	1178	.0869	.541	.652
.45	.1120	.0861	.585	.735
50	.1065	.0852	.625	.818
.55	.0997	.0832	.660	.904
.60	.0930	.0808	.690	.994
.65	.0859	.0774	.720	1.085
.70	.0785	.0736	.745	1.181
.75	.0710	.0699	.763	1.278
.80	.0632	.0650	.778	1.383
.85	.0553	.0600	.784	1.495
.90	.0473	.0541	.785	1.613
.95	.0393	.0480	.778	1.743
1.00	.0315	.0420	.750	1.885
1.05	.0233	.0352	.696	2.500
1.10	0156	0286	599	2.240
1.15	.0075	.0229	.376	2.500

Propeller No. 3792. Diameter, 8 feet 6 inches

28° AT 0.75 R.

$\frac{V}{nD}$	C_T	C_P	η	C_S
0.10	0.1308	0.1450	0.090	0.147
.15	.1290	.1410	.137	.222
20	.1271	.1369	.186	.298
.25	.1257	.1330	.236	.375
.30	.1243	.1288	.290	.453
.35	.1233	.1249	.346	.532
.40	.1223	.1211	.404	.610
.45	.1220	.1167	.470	.690
.50	.1223	.1133	.540	.771
55	.1231	.1130	.600	.850
.60	.1198	.1128	.637	.928
.65	.1149	.1125	.662	1.005
.70	.1100	.1115	.690	1.086
.75	.1048	.1097	.715	1.167
.80	.0982	.1067	.737	1.252
85	.0911	.1029	.753	1.339
.90	.0843	.0989	.768	1.432
.95	.0772	.0942	.779	1.525
1.00	.0703	.0893	.787	1.623
1.05	.0632	.0835	.795	1.726
1.10	.0560	.0770	.800	1.837
1.15	.0483	.0696	.797	1.955
1.20	.0410	.0624	.789	2.090
1.25	.0335	.0541	.773	2.240
1.30	.0260	.0462	.730	2.400
1.35	.0183	.0376	.656	2.600
1.40	.0108	.0293	.515	2.830
1.45	.0031	.0212	.210	3.130

Propeller No. 3792. Diameter, 8 feet

12° AT 0.75 R.

$\frac{V}{nD}$	C_T	C_P	η	C_S
0.10	0.0900	0.0380	0.237	0.192
.15	.0841	.0379	.334	.288
.20	.0779	.0366	.425	.387
.25	.0705	.0353	.500	.487
.30	.0635	.0340	.561	.590
.35	.0562	.0322	.610	.695
.40	.0488	.0302	.645	.805
.45	.0407	.0274	.669	.923
.50	.0330	.0247	.668	1.047
.55	.0244	.0216	.623	1.185
.60	.0155	.0179	.520	1.343
.65	.0065	.0140	.302	1.525

Propeller No. 3792. Diameter, 8 feet

17° AT 0.75 R.

$\frac{V}{nD}$	C_T	C_P	η	C_S
0.10	0.1218	0.0656	0.185	0.172
.15	.1179	.0648	.272	.259
.20	.1133	.0639	.355	.346
.25	.1081	.0630	.429	.435
.30	.1025	.0622	.494	.522
.35	.0959	.0613	.547	.612
.40	.0890	.0600	.594	.703
.45	.0811	.0575	.635	.798
.50	.0726	.0540	.673	.897
.55	.0632	.0491	.707	1.006
.60	.0535	.0442	.728	1.120
.65	.0447	.0392	.740	1.242
.70	.0343	.0362	.738	1.361
.75	.0285	.0294	.728	1.520
.80	.0200	.0243	.659	1.680
.85	.0113	.0193	.498	1.872
.90	.0030	.0145	.186	2.110

TABLE II.—FINAL ADJUSTED COEFFICIENTS—Continued

Propeller No. 3792. Diameter, 8 feet

23° AT 0.75 R.

$\frac{V}{nD}$	C_T	C_P	η	C_S
0.10	0.1466	0.0967	0.152	0.160
.15	.1441	.0961	.225	.240
.20	.1412	.0958	.295	.320
.25	.1378	.0954	.360	.400
.30	.1340	.0952	.423	.481
.35	.1297	.0950	.477	.561
.40	.1246	.0950	.524	.641
.45	.1187	.0943	.566	.722
.50	.1123	.0929	.604	.805
.55	.1055	.0907	.640	.889
.60	.0979	.0874	.672	.979
.65	.0898	.0831	.702	1.072
.70	.0820	.0793	.723	1.163
.75	.0738	.0746	.741	1.262
.80	.0659	.0699	.753	1.364
.85	.0580	.0644	.765	1.470
.90	.0510	.0595	.772	1.585
.95	.0432	.0533	.770	1.709
1.00	.0361	.0478	.755	1.805
1.05	.0285	.0419	.715	1.980
1.10	.0207	.0351	.650	2.150
1.15	.0128	.0284	.518	2.330
1.20	.0050	.0218	.276	2.580

Propeller No. 3792. Diameter, 8 feet

28° AT 0.75 R.

$\frac{V}{nD}$	C_T	C_P	η	C_S
0.10	0.1437	0.1513	0.095	0.146
.15	.1413	.1473	.144	.220
.20	.1393	.1435	.194	.295
.25	.1379	.1397	.247	.371
.30	.1368	.1359	.302	.447
.35	.1363	.1321	.361	.525
.40	.1370	.1286	.426	.603
.45	.1380	.1252	.496	.682
.50	.1365	.1245	.548	.758
.55	.1322	.1242	.585	.835
.60	.1278	.1238	.619	.911
.65	.1223	.1225	.649	.987
.70	.1163	.1210	.673	1.067
.75	.1099	.1177	.700	1.151
.80	.1023	.1137	.720	1.237
.85	.0951	.1091	.742	1.325
.90	.0880	.1043	.760	1.414
.95	.0805	.0992	.771	1.508
1.00	.0732	.0942	.776	1.605
1.05	.0659	.0890	.775	1.703
1.10	.0586	.0832	.775	1.811
1.15	.0511	.0767	.766	1.920
1.20	.0435	.0699	.748	2.045
1.25	.0359	.0620	.723	2.180
1.30	.0282	.0538	.674	2.330
1.35	.0203	.0448	.610	2.515
1.40	.0125	.0360	.487	2.720
1.45	.0043	.0269	.243	2.990

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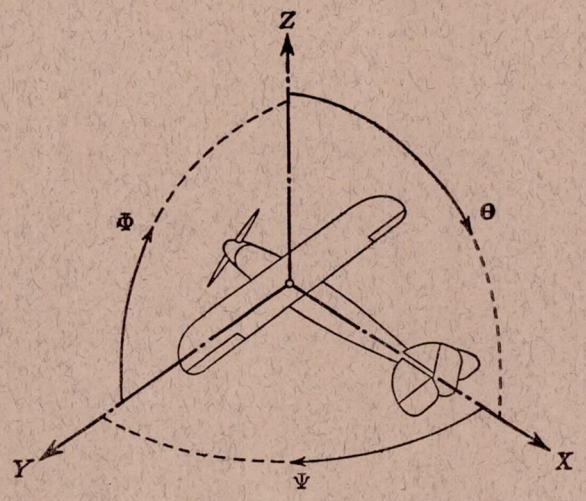

Positive directions of axes and angles (forces and moments) are shown by arrows

Axis		Force (parallel to axis) symbol	Moment about axis			Angle		Velocities	
Designation	Symbol		Designation	Symbol	Positive direction	Designation	Symbol	Linear (component along axis)	Angular
Longitudinal	X	X	rolling	L	$Y \longrightarrow Z$	roll	Φ	u	p
Lateral	Y	Y	pitching	M	$Z \longrightarrow X$	pitch	Θ	v	q
Normal	Z	Z	yawing	N	$X \longrightarrow Y$	yaw	Ψ	w	r

Absolute coefficients of moment

$$C_L = \frac{L}{qbS} \qquad C_M = \frac{M}{qcS} \qquad C_N = \frac{N}{qfS}$$

Angle of set of control surface (relative to neutral position), δ. (Indicate surface by proper subscript.)

4. PROPELLER SYMBOLS

D, Diameter.
p_e, Effective pitch.
p_g, Mean geometric pitch.
p_s, Standard pitch.
p_v, Zero thrust.
p_a, Zero torque.
p/D, Pitch ratio.
V', Inflow velocity.
V_s, Slip stream velocity.

T, Thrust.
Q, Torque.
P, Power.
(If "coefficients" are introduced all units used must be consistent.)
η, Efficiency $= T\ V/P$.
n, Revolutions per sec., r. p. s.
N, Revolutions per minute, r. p. m.
Φ, Effective helix angle $= \tan^{-1}\left(\frac{V}{2\pi rn}\right)$

5. NUMERICAL RELATIONS

1 hp = 76.04 kg/m/s = 550 lb./ft./sec.
1 kg/m/s = 0.01315 hp
1 mi./hr. = 0.44704 m/s
1 m/s = 2.23693 mi./hr.

1 lb. = 0.4535924277 kg
1 kg = 2.2046224 lb.
1 mi. = 1609.35 m = 5280 ft.
1 m = 3.2808333 ft.